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GONADOTROPIC HORMONE IN THE DIAGNOSIS OF CHORION-EPITHELIOMA

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The hormonic pregnancy test is important not only for the early diagnosis of normal pregnancy but also for the early recognition of pathologic changes in the placenta (hydatidiform mole, chorionepithelioma). In a lecture at the Viennese Biologic Society on April 15, 1929, I [1] reported that the excretion of gonadotropic substance in the urine in cases of hydatidiform mole is from two to three times as great as in normal pregnancy and that the concentration of this principle in the fluid of the mole is greater than in its wall. Thus I demonstrated that the production of gonadotropic substance in hydatidiform mole is greater than in normal pregnancy. In 1930 Robert Meyer [2] reported that the hormone excretion is also increased in chorionepithelioma. In a case of chorionepithelioma of the kidney a positive pregnancy test was obtained with only one-seventieth cubic centimeter of urine. Aschheim [3] had previously ascribed the formation of luteal cysts in the ovary in hydatidiform mole and chorionepithelioma to a secretion of the anterior pituitary. The question remained whether in hydatidiform mole and in pregnancy more hormone is actually produced or whether more is just retained.

That the demonstration of an increased excretion of gonadotropic substance in the urine is important for early diagnosis of chorionepithelioma is now acknowledged unanimously in the literature. Physicians are obliged to have the urine of every woman who has suffered from hydatidiform mole assayed for this factor. While the increased excretion of gonadotropic principle usually ceases about one week after delivery of a normal placenta, it may continue for from four to twelve weeks following discharge of a hydatidiform mole. I recommend the following procedure: In case the pregnancy test is still positive six weeks after the discharge of a hydatidiform mole and the content of gonadotropic factor in the urine increases progressively during this time, it is probable that a chorionepithelioma is present. Quantitative assay for gonadotropic substance is especially important in such cases. If a positive pregnancy test can be obtained at the same time with spinal fluid (undiluted or diluted), this is further confirmation of the diagnosis. As a further diagnostic safeguard a carefully performed exploratory curettage is necessary. In case histologic examination of the curettage material is doubtful, which may sometimes be the case, assay of the urine for gonadotropic factor is of greater significance in the diagnosis than the histologic examination.

In case the pregnancy test has become negative following discharge of the hydatidiform mole, the patient's urine should be assayed at monthly intervals. If the negative reaction becomes positive again, the following possibilities must be considered: either there is a new pregnancy or the patient has a chorionepithelioma. I wish particularly to emphasize the possibility of a new pregnancy, because chorionepithelioma is usually the first thing thought of in these cases. There is always the danger of interrupting a normal pregnancy or even of extirpating the pregnant uterus of a healthy young woman. If gynecologic examination does not establish the presence of a new pregnancy, quantitative urinary assay for gonadotropic substance should be performed. In normal pregnancy the excretion of this factor is much less than in chorionepithelioma.[4]

Method.—Examination of urine and spinal fluid is performed with the methods usually employed for the pregnancy test. The content of gonadotropic substance being far greater in chorionepithelioma than in normal pregnancy, the urine as well as the spinal fluid must be correspondingly diluted with water. In a normal pregnancy reactions II and III ("blutpunkte" and luteinization) are obtained in mice with from 1.2 to 2.4 cc. of urine. In chorionepithelioma 0.001 cc. may be sufficient. Titration is performed in such a way that the amount of fluid to be examined is injected into infantile mice, divided in six doses in the course of forty-eight hours.

Tissue Assay.—For the diagnosis of chorionepithelioma, qualitative and quantitative tissue assay for gonadotropic substance is also important. This procedure [5] which I proposed in 1930, often gives valuable information; for this reason I am presenting it here as it is only rarely employed.

(*a*) *Implantation.*—The tissue to be examined is finely cut and amounts of up to 200 mg. are implanted into the femoral musculature of two infantile mice. This is the method by which I demonstrated the gonadotropic function of the anterior pituitary in July 1925. The implanted foreign tissue disintegrates in the musculature of the mouse and is absorbed.

(*b*) *Extraction.*—As one cannot be certain whether or not complete absorption occurs, which may lead to quantitative errors, I prefer the extraction method; this is performed as follows: The tissue to be examined is finely minced and left in ether for twenty-four hours; toxic substances are extracted by ether from tissue (as well as from blood and urine) [6] but not gonadotropic substance. The ether is then poured off and the tissue very energetically mixed to a mash with the addition of from two to three times the amount of sterile sea sand and ten times the amount of distilled water. The mixture is shaken for several hours (at least six, preferably twelve) in a shaking

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1. Zondek, Bernhard: Endokrinologie **5**: 429-430 (Oct.) 1929.
2. Meyer, Robert: Zentralbl. f. Gynäk. **54**: 431 (Feb. 15) 1930.
3. Aschheim, Selmar: Zentralbl. f. Gynäk. **52**: 602 (March 10) 1928.
4. Zondek, Bernhard: Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, Vienna, Julius Springer, 1935, pp. 366-373, 552-556.
5. Zondek, Bernhard: Zentralbl. f. Gynäk. **54**: 2306 (Sept. 13) 1930; Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, p. 554.
6. Zondek, Bernhard: Zentralbl. f. Gynäk. **54**: 2307, 1930; Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, p. 556.

machine. The nonsoluble material is removed by centrifugation and the supernatant fluid is saved. The residue is washed once with water; this supernatant fluid is added to the first. The aqueous extract is washed with ether and is then tested for its content of gonadotropic substance by injection into infantile mice. I have also tried 0.02 per cent sodium hydroxide or 1 per cent ammonia water for the extraction instead of water, but the results were no better. Assays are stated in terms of 1 Gm. of fresh tissue.

Some examples may be cited from the literature of cases in which urinary hormone assays prevented serious errors: Dietrich [7] describes the case of a young woman in whom a histologic diagnosis of chorionepithelioma had been made. As the pregnancy test was negative eight days later and remained negative

TABLE 1.—*Gonadotropic Potency of Urine in Case 1*

Date	Follicle-Stimulating Factor*	Luteinizing Factor*
Aug. 23	3,333	555
Oct. 31	16,650	16,650
Nov. 6	277,500	277,500
Nov. 23	500,000	500,000

* Mouse units per liter of morning urine.

on repitition at intervals of four weeks, operation was postponed. The patient remained healthy. The hormonic urine assay demonstrated the incorrectness of the histologic examination and the young woman was saved from a mutilating extirpation of the uterus. In another woman, aged 25, reported by Fahlbusch,[8] histologic examination performed by Robert Meyer, an expert on chorionepithelioma, suggested malignant degeneracy of the villi. There was a retained placental fragment with destructive epithelial proliferation of such a nature as to render possible invasion of the uterine wall. The hormonic urine reaction was negative. As the patient wanted a child, intervention was delayed especially as further urine tests were also negative. The patient remained healthy. In contrast, Balkow [9] reported a case in which histologic examination of the curettage material was inconclusive, while assay of diluted urine gave a positive pregnancy test. On extirpation of the uterus a well encapsulated, reddish brown tumor somewhat larger than a plum was found in the cavum. This tumor histologically was indisputably a malignant chorionepithelioma. Kimbrough [10] made a diagnosis of chorionepithelioma five weeks after discharge of a mole based on increasing gonadotropic potency of the urine and cystic enlargement of the ovaries despite the absence of uterine hemorrhage.

Following are descriptions of three cases of malignant chorionepithelioma which I have examined in the past two years. In addition to the urine the tumor tissue also was examined; in one case the spinal fluid and in another the pituitary gland was investigated:

CASE 1.—A woman, aged 38, had not been pregnant for the last ten years. In the beginning of 1935, menstruation failed to occur for two weeks; then a slight hemorrhage occurred. Curettage, performed in Europe, apparently did not show anything suggestive. In June the patient had a severe hemorrhage. Curettage at that time indicated an indisputable malignant chorionepithelioma (Dr. Casper). Urine assay, performed by me, showed an excessively high content of gonadotropic substance (1,000,000 mouse units of follicle-stimulating factor and 55,000 mouse units of luteinizing factor per liter of morning urine). So high a hormone excretion indicates with certainty the presence of a chorionepithelioma. July 1, 1935, total extirpation of the uterus and adnexa was performed by Dr. Danziger of Tel-Aviv, who kindly placed at my disposal the surgical specimen.

The excretion of gonadotropic substance declined strongly after operation; 500,000 mouse units of follicle-stimulating factor and only 500 mouse units of luteinizing principle per liter were now found in the urine. The patient, who felt very well, was treated postoperatively with irradiation (Professor Halberstädter). She received 1,480 mg. hours of radium intravaginally from July 21 to 29, 1935, and in addition up to August 7, high voltage roentgen irradiation to a total of 3,550 roentgens. Five days after termination of the irradiation the urine was assayed once more and showed a further decrease in excretion of follicle-stimulating factor (only 555 mouse units per liter). In contrast, however, the content of luteinizing principle had decreased scarcely at all (416 mouse units per liter). Thus the pregnancy test remained positive even after irradiation.

In the following weeks the patient felt well and gained weight; she believed herself cured. The blood picture was normal. In contrast to the clinical condition, urine assays showed an increased excretion of gonadotropic hormone. August 23, two weeks after the last irradiation, the content of follicle-stimulating substance had increased from 555 mouse units to 3,333 mouse units and the content of luteinizing factor from 416 mouse units to 555 mouse units per liter of morning urine. These observations indicated with certainty that metastasis must have occurred somewhere in the body. Made watchful by the result of the urine assay, we searched for a metastasis. Four weeks later a lesion was found in the left lung by x-ray examination, at the level of the third rib. High voltage roentgen therapy was administered over the lung from October 4 to 10 and from November 7 to 24. Gynecologic examination showed nothing pathologic in the pelvis. Clinically the patient continued to feel well and was fully able to work. The gonadotropic potency of the urine quickly increased (table 1).

In December the patient began to lose slightly in weight and was paler. A metastasis (diameter 1 cm.) was now visible roentgenologically in the base of the right lung. Furthermore, in the left parametrium a small hard nodule was felt, growing rapidly; it reached the size of a fist within three weeks and caused trouble by pressure on the bladder. Hemoptysis occurred and the patient complained of head pressure, headache and dizziness. These symptoms increased in intensity, indicating

TABLE 2.—*Tissue Assays in Case 1*

Tissue	Mouse Units per Gram of Fresh Tissue Follicle-Stimulating Factor	Luteinizing Factor
Chorionepithelioma (uterine tumor)	1,500	800
Uterine mucosa	1,000	100
Ovary	150	0

cerebral metastases. In the middle of January the patient became somnolent. February 17 death occurred with symptoms of cerebral tumor. Autopsy was not permitted.

Tissue Assay.—The surgical preparation showed a spongy tumor the size of a plum, well delimited in the right corner of the fundus. The tumor infiltrated the musculature without reaching the serosa. The following tissues were assayed: (1) the tumor tissue itself, (2) the mucosa of the left uterine wall at a spot distant from the tumor, and (3) the ovaries. The tissues were extracted and the extracts assayed (table 2).

CASE 2.—A woman, age 36, born in Persia, had had five pregnancies, the last five years before. In September 1934 an abortion occurred. There was no suspicion of a mole at that time. Beginning in January 1935 the patient had irregular, occasionally severe hemorrhages. At the end of November 1935 she was admitted to the hospital in a bad general condition. (This case was referred to me by Dr. Sadovsky of Jerusalem.)

Gynecologic examination indicated the presence of a chorionepithelioma. A partly necrotic tumor the size of a plum was found in the anterior vaginal wall; it was very soft and bled

7. Dietrich: Zentralbl. f. Gynäk. **54**: 194 (Jan. 18) 1930.
8. Fahlbusch, O.: Zentralbl. f. Gynäk. **54**: 1342 (June 21) 1930.
9. Balkow, E.: Zentralbl. f. Gynäk. **57**: 159 (Jan. 21) 1933.
10. Kimbrough, R. A., Jr.: Am. J. Obst. & Gynec. **29**: 12 (July) 1934.

readily. In the posterior vaginal wall there was a necrotic spongy, fetid tumor the size of an egg. The uterus was enlarged, corresponding to a three months' pregnancy. A piece of the tumor was taken with a curet from the uterus; the histologic examination showed an indisputable chorionepithelioma.

In this advanced case, with metastases in the vagina, the diagnosis was easily established clinically. The urine assay confirmed the diagnosis. The content of gonadotropic substance was exceedingly high, such as I had not observed before (more than 1,000,000 mouse units of follicle-stimulating and luteinizing hormone per liter of morning urine). The blood also contained an abundant supply of gonadotropic substance (500,000 mouse units of follicle-stimulating factor and 250,000 mouse units of luteinizing principle per liter of serum). In this case the spinal fluid was also examined (40,000 mouse units of follicle-stimulating factor and 6,666 mouse units of luteinizing substance per liter).

Tissue Assay.—As the vaginal metastasis was already necrotic, its content of gonadotropic principle was very small (600 mouse units of follicle-stimulating factor per gram. No luteinizing effect was obtained at all. In the uterine tissue, which also showed necrosis, I found 1,500 mouse units of follicle-stimulating substance and 300 mouse units of luteinizing factor per gram of tissue.

Two weeks after admission to the hospital the patient died with high fever and cerebral symptoms.

CASE 3.—This case has been reported elsewhere.[11] I mention it here because of the data furnished by tissue assay and investigations of the pituitary. This case was referred to me by Dr. James Heyman of Radiumhemmet during my stay in Stockholm. The patient was a woman, aged 27, in whom a hydatidiform mole of a size approaching the fourth month of pregnancy had been removed in November 1933. Jan. 1, 1934, severe hemorrhage occurred. In the introitus vaginae there was a plum-sized spongy, grayish-black, friable tumor which bled easily; a similar tumor was found in the posterior vaginal wall. The os uteri was open three finger breadths and was filled with an egg-sized, spongy, friable tumor. Histologically this was an indisputable chorionepithelioma. It metastasized rapidly, and death occurred Jan. 27, 1934. Autopsy showed metastases in the liver and in the lung.

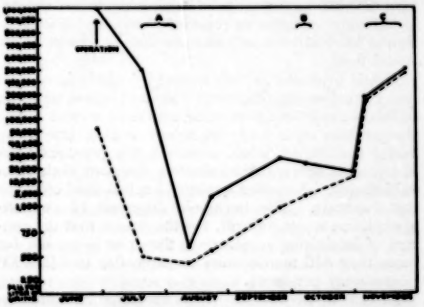
Assay of the urine some days before death occurred had shown a value of 100,000 mouse units each of follicle-stimulating and luteinizing factors per liter. The blood contained 10,000 mouse units of each per liter. A quantitative assay of the primary tumor was impossible because of extensive necrosis, but assay of the metastasis in the lung gave 100 mouse units each of follicle-stimulating and luteinizing factors per gram of fresh tissue (extraction method).

The pituitary gland was impressive macroscopically by its size. It was cut through sagittally; one half was examined histologically and the other half assayed biologically. The anatomic examination (performed by Professor Berblinger) revealed typical pregnancy cells in the posterior part of the anterior lobe; otherwise the cellular structure was normal. Assay of the pituitary was performed by the implantation method. Although ordinarily the pituitary from cases of chorionepithelioma is found to be free of gonad-stimulating effect, in this case gonadotropic substance was present; however, only a follicle-stimulating effect was obtained and this was less than that of the normal gland. About ten times the normal amount of gland was necessary (i. e., 50 mg.) to produce follicular maturation. A luteinizing effect could not be obtained even after implantation of 100 mg. of tissue.

COMMENT

The three cases here reported demonstrate the value of the hormonic pregnancy test in the diagnosis of chorionepithelioma. The differential diagnosis between normal pregnancy and hydatidiform mole and chorionepithelioma is rendered possible by the fact that production and excretion of gonadotropic substance is greatly increased in the latter instances. Production of gonadotropic principle is greatest at the beginning and in the early months of pregnancy; it diminishes in the latter months (Aschheim and Bernhard Zondek). In early pregnancy the content of this substance amounts to an average of 10,000 mouse units per liter of blood and from 5,000 to 30,000 mouse units per liter of morning urine. Production of gonadotropic principle may also be increased in gestation toxicosis (G. van S. and O. W. Smith [12]) in such a fashion that amounts near those obtaining in hydatidiform mole may be discharged in the urine. The increased excretion therefore indicates the presence of a hydatidiform mole only if toxemia of pregnancy can be excluded. The symptoms of toxicosis are clinically so clear that an error should not arise from this source. Chorionepithelioma does not occur until weeks or months have passed after discharge of the placenta or a hydatidiform mole. As I have already mentioned, differential diagnosis of a new normal pregnancy must always be considered.

The pregnancy test is based on the occurrence of blood points (reaction II) or corpora lutea (reaction III) in the ovaries of mice; that means on the presence of the luteinizing principle ("prolan B"). Pregnancy is diagnosed when, by injection of undiluted urine, (six



Gonadotropic substance in urine in case 1. Solid line, follicle-stimulating factor; broken line, luteinizing principle. Postoperative treatment: *A*, intravaginal radium irradiation; high voltage roentgen therapy of the pelvis. *B*, *C*, high voltage roentgen therapy of the lungs.

injections of from 0.2 to 0.4 cc.) reaction II or III can be obtained; that is, if at least from 416 to 832 mouse units of luteinizing factor is present in a liter of morning urine. The presence of this quantity of follicle-stimulating factor ("prolan A") is not sufficient for the diagnosis of pregnancy, as such amounts also occur in urine apart from pregnancy; namely, in disturbances of the ovarian function [13] and in certain tumors.[13] While working out the pregnancy test I observed, on the occasion of a wrong diagnosis (mistaken for myoma), that reaction I (follicle maturation) may not be used for the pregnancy test; the margin of error would amount to 10 per cent if reaction I were considered a positive test.

In chorionepithelioma the production of follicle-stimulating factor may be so immensely increased, and such immense amounts of hormone may be present in the urine, that the occurrence of follicle maturation in the test animal may also be used for diagnosis to a certain degree, but only when at least 500,000 mouse units of follicle-stimulating factor is present in a liter of

11. Zondek, Bernhard: Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, p. 371.

12. Smith, G. van S., and Smith, O. W.: Soc. Exper. Biol. & Med. **30**: 918 (April) 1933.

13. Zondek, Bernhard: Klin. Wchnschr. **9**: 393 (March 1), 679 (April 12), 1207 (June 28) 1930; **11**: 1839 (Oct. 29) 1932.

urine. Of course, at the same time the content of luteinizing factor must be determined; usually this is correspondingly increased. But this is not always the fact, as illustrated by case 1.

While the presence of a definite amount of luteinizing factor (at least 416 mouse units per liter of urine) affirms the diagnosis of pregnancy, such exact numerical values cannot be used in the diagnosis of a pathologic placenta (mole, chorionepithelioma).

(*a*) If a woman is pregnant and if there is a suspicion of the presence of hydatidiform mole, pregnancy toxicosis must first be excluded. If there is no toxicosis and if the content of luteinizing factor amounts to more than 200,000 mouse units per liter of morning urine, it is likely that a hydatidiform mole [14] is present. One assay is insufficient, however. The more the content of gonadotropic substance increases in the course of observation the more certain will diagnosis become. The spinal fluid should also be examined. If the pregnancy test (reaction II or III) can be obtained with undiluted or diluted spinal fluid, this may be important support for the diagnosis. According to my present experience I would make the diagnosis of hydatidiform mole if at least 200,000 mouse units of luteinizing factor is present in a liter of urine on repeated assays, and if in addition at least 416 mouse units per liter is present in the spinal fluid.

(*b*) If a patient has discharged a hydatidiform mole and thereafter the pregnancy test has become negative, to become positive again in the course of several weeks, the presence of at least 416 mouse units of luteinizing factor per liter of urine, in case a new pregnancy can be excluded, will in itself indicate a diagnosis of chorionepithelioma. A similar amount in spinal fluid confirms the diagnosis. The hormonic diagnosis of chorionepithelioma is not difficult, for the reason that the content of luteinizing substance in the urine is usually far more than 416 mouse units per liter (up to 1,000,000 mouse units per liter).

In case 3 the amount of gonadotropic substance in the urine was relatively small, being only 100,000 mouse units each of follicle-stimulating and luteinizing factor per liter. These relatively small values may have been due to the fact that the patient was in a bad general condition. The urine was examined some days before death. As I reported in 1930,[15] women suffering from carcinoma frequently discharge follicle-stimulating factor in the urine. When the general condition deteriorates acutely, this principle frequently disappears from the urine. This has been confirmed by Borst, Döderlein and Gostimirović.[16]

For the diagnosis of chorionepithelioma the demonstration of gonadotropic substance in urine and spinal fluid is more important than its presence in the blood. In case 2 the blood contained 500,000 mouse units of follicle-stimulating factor per liter; on the same day, however, the urine contained double this amount of hormone. The content of luteinizing factor in the urine was four times as high as in the blood; 1,000,000 mouse units per liter of urine, 250,000 mouse units per liter of blood. However, I have not yet seen such high values for the blood except in chorionepithelioma.

It is necessary to observe excretion of gonadotropic substance continuously in chorionepithelioma; this is more informative of the progress of the disease than the clinical signs. If an essential decrease in production occurs following therapy (operation, x-ray) this is prognostically favorable. As long as the pregnancy test in urine remains negative, namely less than 416 mouse units of luteinizing substance per liter of urine, prognosis is favorable. In case the pregnancy test, in spite of treatment, remains continuously positive, the prognosis is bad; in case the hormone content increases in spite of therapeutic measures, the prognosis is distinctly unfavorable, as this is an indication of metastasis.

Qualitative and quantitative tissue assay for gonadotropic substance has scarcely been employed for the diagnosis of chorionepithelioma. Considering the enormous inundation of the body with this hormone, it seems likely that it would be found in relatively high concentration not only in the tumor itself but also in other tissues of the body. Nevertheless, the difference is considerable, as I found in case 1; the tumor contained a far higher content of gonadotropic principle than either the uterine mucosa or the ovary. In my experience such a high content of hormone occurs only in chorionepithelioma and not in other malignant tumors. In the latter the luteinizing factor is not found at all,[17] or very rarely, and the follicle-stimulating factor only in relatively small amounts (1 mouse unit per gram of fresh tissue). The presence of 800 mouse units of luteinizing factor per gram of fresh tissue establishes the diagnosis of chorionepithelioma. (The tissue must be fresh and should not show signs of necrosis.) In the normal placenta in the seventh week of pregnancy I have found 143 mouse units of follicle-stimulating and luteinizing factors in 1 Gm. of fresh tissue by implantation. Still larger amounts of hormone can probably be demonstrated by the extraction method. Assays of between 100 and 300 mouse units per gram can be obtained with retained placental fragments. In metastases, however, the presence of 100 mouse units of luteinizing factor per gram is sufficient to establish the diagnosis of chorionepithelioma. Occasionally there are no definite signs of chorionepithelioma in the uterus at autopsy; if in such a case one finds a value of 100 mouse units per gram in some metastasis, e. g., in a cerebral or liver tumor, the diagnosis of chorionepithelioma is established.

Also in chorionepithelioma of men, assay for gonadotopic substance is of importance, particularly in mixed testicular tumors. In a lecture at the Viennese Biologic Society (April 15, 1929) I [1] pointed out, with reference to the strongly increased excretion of gonadotropic principle in the chorionepithelioma of women: "It will be very interesting to examine the urine of men suffering from a chorionepithelioma, in order to determine the biologic identity of these epitheliomas." Some weeks later (May 1929) I was in a position to examine a case [18] of malignant testicular tumor; a greatly increased excretion of the hormone was detected (both follicle-stimulating and luteinizing factors). This was a mixed tumor with chorionepitheliomatous elements. The biologic identity of these epitheliomas in men and women is now established. By assay of the tumor material (implantation or, still better, extraction) evidence may be derived as to the nature of the tumor. Thus I did not find any gonadotropic substance

14. It must be mentioned that in the literature there are several reported cases of hydatidiform mole without increased excretion of gonadotropic substances. These cases, although very rare, indicate that a normal content of gonadotropic substance in pregnancy urine does not absolutely rule out the presence of a hydatidiform mole.

15. Zondek, Bernhard: Klin. Wchnschr. **9**: 679 (April 12) 1930.

16. Borst, Max; Döderlein, Albert, and Gostimirović, D.: München. med. Wchnschr. **79**: 1104 (July 8) 1932.

17. Zondek, Bernhard: Hormone des Ovariums und des Hypophysenvorderlappens, ed. 1, Berlin, Julius Springer, 1931, p. 269.

18. Zondek, Bernhard: Der Chirurg., 1930, *23*; Klin. Wchnschr. **11**: 274 (Feb. 13) 1932.

in the tumor tissue in a disgerminoma, but it was present in the chorionepitheliomatous areas in large quantities. One can also get some idea of the malignancy of a particular tumor by means of these assay methods: hormonic tissue diagnosis and hormonic urine analysis. The latter seems to me to be confirmed by the investigations of Ferguson.[19] I am, however, skeptical whether the anatomic structure of a tumor can be ascertained by the hormone excretion as accurately as Ferguson appears to believe.

It is interesting that both in normal pregnancy and in cases of chorionepithelioma the pituitary gland has been found to be free of gonadotropic substance (Philipp, Zondek, Fels). In contrast to these observations, assay of the anterior pituitary in case 3 indicated the presence only of follicle-stimulating but not of luteinizing factor. But the content of the former was diminished by 90 per cent. The question has frequently been discussed whether the large increase of gonadotropic hormone occurring in pregnancy has its origin in the pituitary gland or in the placenta. Because in pregnancy this substance is not found in appreciable quantity in the anterior lobe but does occur in large amounts in the placenta, the conclusion has been drawn that it originates in the placenta. It is difficult to understand why the function of the anterior pituitary should so change in pregnancy as well as in chorionepithelioma and malignant testicular tumors. The reduced content of hormone in the gland does not in my estimation prove absence of function. It would exceed the scope of the present paper to go into this question which I have considered elsewhere.[20] One point may be mentioned here, however. Hohlweg and Junkmann[21] and Schoeller[22] have suggested the existence of a cerebral sexual center, which is regulated by the estrogenic hormone. Reduction in or absence of estrogenic hormone would lead—by influence on the center—to an increased activity of the pituitary gland; increased production of follicular hormone would in the same way inhibit secretion by the anterior lobe. The rise in the level of the estrogenic hormone in pregnancy so affects the sexual center that the anterior pituitary ceases its production of gonadotropic hormone. However, in chorionepithelioma and in malignant testicular tumor the anterior pituitary contains little or no gonadotropic hormone. In these conditions the amount of estrogenic substance is not increased; consequently anterior pituitary function cannot be interrupted in these instances by estrogenic hormone. If the negative hormone finding in the pituitary of pregnancy is explained by the increased level of estrogen, the negative hormone finding in the pituitary gland in chorionepithelioma and in testicular tumor is inexplicable on this basis. The absence of gonadotropic hormone in the pituitary of pregnancy cannot be considered proof of the existence of a sexual center controlled by estrogenic hormone. As I have demonstrated recently by experiment,[23] the function of the anterior pituitary (gonadotropic hormone, growth hormone) can be impaired by estrogen; however, the production of gonadotropic hormone in the cells of the anterior pituitary is not inhibited, but only delivery of the hormone into the blood stream.

19. Ferguson, R. S.; Downes, Helen R.; Ellis, Edward, and Nicholson, Mary E.: Am. J. Cancer **15**:835 (April) 1931. Ferguson, R. S., ibid. **16**:269 (June) 1933; Am. J. Roentgenol. **29**:443 (April) 1933; J. Urol. **31**:397 (March) 1934.
20. Zondek, Bernhard: Hormone des Ovariums und des Hypophysenvorderlappens, ed. 1, chapter 36.
21. Hohlweg, Walter, and Junkmann, Karl: Klin. Wchnschr. **11**:321 (Feb. 20) 1932.
22. Schoeller, W.: Deutsche med. Wchnschr. **60**:21 (Jan. 5) 1934.
23. Zondek, Bernhard: Lancet **2**:842 (Oct. 10) 1936.

SUMMARY

1. In the pathologic placenta (hydatidiform mole, chorionepithelioma) the production and excretion of gonadotropic substance may be immensely increased. The hormone appears in greatly increased amounts in the blood, urine and spinal fluid.

2. A diagnosis of hydatidiform mole cannot be considered as established unless, in repeatedly performed examinations, at least 200,000 mouse units of luteinizing principle is found in the urine and, in addition, a positive luteinizing reaction is obtained from the spinal fluid, preferably diluted. It is necessary to rule out toxemia of pregnancy, as in this condition large amounts of luteinizing substance are also excreted in the urine. However, in the latter case only a follicle-stimulating effect is obtained in spinal fluid.

3. If the pregnancy test still remains positive six weeks after the discharge of a hydatidiform mole, and if the content of gonadotropic substance in the urine has progressively increased in this period, it suggests a diagnosis of chorionepithelioma particularly if a positive reaction is also found in the spinal fluid. For confirmation of the diagnosis, exploratory curettage is necessary. If the result of the histologic examination is doubtful, the result of biologic assay of the urine and the spinal fluid is of great significance.

4. In case the pregnancy test has become negative after the discharge of the hydatidiform mole and once more becomes positive within some time there is either a new pregnancy or a chorionepithelioma. Differential diagnosis must be established by clinical observation and, in addition, by quantitative urine assays.

5. The assay of urine for gonadotropic substance is of importance not only for diagnosis but also for prognosis in chorionepithelioma. If the pregnancy test has become negative following therapeutic measures, and if luteinizing substance occurs once more in the urine, this indicates that the malignant process is proceeding. Apparent clinical improvement may often be deceiving in such cases.

6. A considerable reduction in excretion of follicle-stimulating hormone occurring suddenly without therapeutic measures is clinically a threatening sign, although when this occurs following therapy it is usually considered a favorable sign.

7. As the normal placenta is rich in gonadotropic material, the presence of 800 mouse units of luteinizing substance per gram of fresh tissue obtained by curettage must be established before one can diagnose a malignant condition. If 100 mouse units per gram is found in extra-uterine tumors, this indicates that the tumor is a metastasizing or extragenital chorionepithelioma.

8. Chorionepithelioma of the testicle or testicular teratoma with chorionepitheliomatous inclusions lead to a strongly increased production and discharge of follicle-stimulating and luteinizing factors. This increased excretion may also occur occasionally with other testicular tumors. It is absent in disgerminoma. Tissue assay of testicular tumors furnishes valuable information as to the nature of the tissue. Disgerminomas do not contain gonadotropic substance; the chorionepitheliomatous parts contain much of this factor.

9. The anterior pituitary in normal pregnancy as well as in chorionepithelioma and in malignant testicular tumor contains little or no gonadotropic hormone.

TREATMENT OF MENSTRUAL MIGRAINE

WITH SMALL DOSES OF GONADOTROPIC EXTRACT OF PREGNANCY URINE

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As Critcheley and Ferguson[1] said before the Harveian Society, "Migraine has been the happy hunting ground of the theorist, and the problem has been attacked by representatives of all branches of medicine. Each in turn has discovered in migraine phenomena pertaining to his own specialty . . . has hit upon the true nature of the malady . . . has found the infallible remedy. Obviously, such mutually exclusive viewpoints cannot all be entirely correct, and the multiplicity and diversity of the hypotheses suggest that the problem is more complex than imagined, and probably one which presents a number of facets."

It is my purpose in this paper, which records the results of a hitherto unreported method of treatment, to shed more light on the nature of this puzzling malady and perhaps also to add something to our relatively meager knowledge of the gonadotropic factor extracted from pregnancy urine.[2] However, it must be kept in mind that only one of the many facets of the migraine problem is considered.

Space will not permit any detailed discussion of the theories as to the cause of migraine. Since Riley's[3] monumental review of the subject in 1932, excellent articles have been published by Critcheley and Ferguson[1] in England and by Bassoe[4] in America in which migraine is discussed in all its aspects, including the endocrine. It is generally believed that there is at least an endocrine factor in the production of menstrual migraine. Even allergists such as Andresen[5] postulate a "reaction resulting from sensitization to one of the products elaborated at the time of menstruation." But in the endocrine field again nearly every gland has at one time or another been accused of being overactive, underactive or dysfunctional, yet treatment directed at the supposed cause has rarely been as successful in the hands of others as the original report gave them hope to expect. Perhaps an exception should be made in the case of Thomson,[6] who in 1932 reported twenty-five cases of headache occurring particularly at menstruation, in seventeen of which some abnormality of the sella turcica was demonstrated radiologically, nine of them showing complete calcification of the interclinoid ligaments. He believes, as was previously suggested by Pardee[7] and by Timme,[8] that the periodic headaches were caused by a swelling of the pituitary gland in this confined space. He also suggested that in cases in which no sellar abnormality could be demonstrated radiologically there might possibly be a complete membranous covering without ossification. Since the administration of estrogen has been shown in animals to reduce the size of the pituitary body, Thomson used this substance in the treatment of menstrual headache. It is debatable whether this view of the cause of the headaches is tenable, but there is no question as to the results of his treatment with estrogen. Of the twenty-five cases he reported ten completely relieved, six markedly improved, five slightly improved and four in which there was no apparent effect. It is of interest to observe, however, that two of Thomson's patients, in whom estrogen therapy failed, were subsequently relieved by injections of extracts of the corpus luteum.

Then too there is the work of Blakie and Hossack,[9] who reported a series of twenty cases of menstrual migraine all of which were relieved by treatment with estriol complex (emmenin).

Stieglitz,[10] in describing the migraine physique, gives a remarkably accurate description of the physical appearance of the woman suffering from ovarian deficiency without, however, mentioning the similarity, and, in tabulating the characteristic manifestations in his 100 cases, lists cases under menses as follows: normal 6 per cent, marked intoxication 91 per cent, dysmenorrhea 63 per cent.

Finally there is the laboratory evidence offered by Riley, Brickner and Kurzrok,[11] who over a prolonged period made daily hormone studies on the urine of thirteen patients—eleven females and two males—suffering from migraine. In all the women of menstrual age the excretion of estrogen was far below normal, though there was no relationship between variations in the excretion of estrogen and the occurrence of headache. The whole group of patients experienced a total of twenty-nine attacks of migraine during the investigation and in twenty instances the headache was preceded or accompanied by the appearance of gonadotropic substance in the urine. Generally it appeared from one to six days before the headache and disappeared on the day of the attack. Occasionally it appeared without the subsequent development of headache. In two patients presenting status migrainicus the excretion of gonadotropic substance was practically uninterrupted. Nine female patients were injected with 2 cc. of gonadotropic factor from the urine of pregnancy and in seven an attack of migraine developed within four to twelve hours. The authors conclude: "The presence of [gonadotropic substance] in the urine is definitely related to the occurrence of migrainous seizure. Substantiation is given to the hypothesis that ovarian and presumably hypophyseal activities are closely related to the occurrence of migraine."

REPORT OF CASES

Case 1.—An unmarried woman, aged 38, complained of severe headache either unilateral or bilateral, accompanied by nausea and vomiting, which recurred every three weeks at the time of her menstrual period and lasted three or four days. She had been constantly under treatment for many years. The sinuses had been operated on three times and the uterus suspended twice. Antiallergic treatment had been carried out over a long period. For the past seven years she had been on endocrine therapy including anterior pituitary extract, solution of posterior pituitary and estrogen by hypodermic injection, and thyroid, pituitary and various ovarian preparations by mouth. In July 1933 she was still suffering from the headaches. At

From the Research Department of the Santa Barbara Clinic.

1. Critcheley, Macdonald, and Ferguson, F. R.: Migraine, Lancet 1: 123 (Jan. 21), 182 (Jan. 28) 1933.

2. The gonadotropic substance from pregnancy urine (follutein) used in this study was generously supplied by E. R. Squibb & Sons through the courtesy of Dr. John H. Anderson, director of the Biological Laboratories.

3. Riley, H. A.: Migraine, Bull. Neurol. Inst., New York 2: 429 (Nov.) 1932.

4. Bassoe, Peter: Migraine, J. A. M. A. 101: 599 (Aug. 19) 1933.

5. Andresen, A. F. R.: Migraine: An Allergic Phenomenon, Am. J. Digest. Dis. & Nutrition 1: 14 (March) 1934.

6. Thomson, A. P.: A Contribution to the Study of Intermittent Headache, Lancet 2: 229 (July 30) 1932.

7. Pardee, I. H.: Pituitary Headaches and Their Care, Arch. Int. Med. 23: 174 (Feb.) 1919.

8. Timme, Walter: Brit. M. J. 2: 197 (July 31) 1926; Lectures on Endocrinology, ed. 2, New York, Paul B. Hoeber, Inc., 1932, p. 124; J. Nerv. & Ment. Dis. 77: 518 (May) 1933.

9. Blakie, N. H., and Hossack, J. C.: The Treatment of Migraine with Emmenin, Canad. M. A. J. 27: 45 (July) 1932.

10. Stieglitz, E. J.: The Migraine Physique, Am. J. M. Sc. 189: 359 (March) 1935.

11. Riley, H. A.; Brickner, R. M., and Kurzrok, Raphael: The Abnormal Excretion of Theelin and Prolan in Patients Suffering from Migraine, Bull. Neurol. Inst., New York 2: 53 (June) 1933; J. Nerv. & Ment. Dis. 77: 516 (May) 1933.

this time an x-ray study of the sella turcica showed a complete bony bridging between the anterior and posterior clinoids. Daily treatment with gonadotropic factor from pregnancy urine was instituted. Ten days later she menstruated and complained of only a slight headache. The next month routine therapy, as described later, with the same preparation was given and she had a period entirely without symptoms. Treatment was continued during the succeeding nine months with the frequency of the dose gradually reduced. The menstrual cycle increased to twenty-six or twenty-seven days, very occasionally with a slight transient headache but usually with none at all. She then discontinued treatment for four months but since the headaches returned and she found that a single small dose of gonadotropic factor from pregnancy urine (18 rat units) would relieve them, she has taken this amount about twice a month during the past year.

CASE 2.—An unmarried nurse, aged 43, whose headaches had been growing progressively more severe for several years, was given anterior pituitary extract and solution of posterior pituitary with no effect on her headaches. For about two years she was considerably relieved by injections of a commercial ovarian extract. For the last six months her headaches had failed to be so relieved, had become practically continuous and were so severe that she was taking daily from 3 to 4 grains (0.2 to 0.25 Gm.) of codeine in addition to large doses of acetylsalicylic acid and aminopyrine. She was given daily injections of estrogen but her headaches became so much more severe that this was discontinued and from Jan. 6 to 22, 1934, she was given daily injections of gonadotropic factor extracted from the urine of pregnancy. From January 9 until July she remained free from headaches. When last seen in May 1936 she was still comfortable, though she had taken an occasional short course of treatment with gonadotropic factor from the urine of pregnancy when the headaches appeared to be returning.

CASE 3.—A married woman, aged 44, complained that her periods since their onset at the age of 17 had always been accompanied by a severe headache, either unilateral or bilateral, beginning from three to four days before the flow and associated with nausea, faintness, nervousness, the passing of urine every few minutes, and loose movements. For many years she had been given thyroid and ovarian and pituitary preparations without relief. In March 1933 she was given estrogen for two months with considerable relief, but not freedom, from headaches. In May she was changed to gonadotropic factor extracted from the urine of pregnancy five days before the onset of menstruation, which was accompanied by a three day headache. The following month she had a full course of the gonadotropic factor, which has since been continued in reduced dosage, and she has gone three years with only an occasional slight transient headache except on one occasion when she had been without treatment for three months.

CASE 4.—A married woman, aged 31, just before the appearance of the catamenia at 10½ years had the first of many attacks of unconsciousness diagnosed at various times as epilepsy and major hysteria. These attacks had disappeared in recent years but had been replaced by severe headaches occurring chiefly preceding her menstrual periods, which were slightly late and very short and scanty. She had for twenty years been continuously under treatment of various sorts, including thyroid and pituitary preparations, without relief. In the past year her headaches had become practically continuous and she was utterly exhausted. A report of an x-ray study made in 1929 read "The sella turcica appears to be smaller than normal and the posterior clinoids are prominent." For part of the first month she was given a small dose of thyroid by mouth and gonadotropic factor from pregnancy urine by hypodermic injection with slight improvement. The second month she was given estrogen both by mouth and by hypodermic injection with moderate improvement. The third month, June 1933, she was given a full course of gonadotropic factor, and this treatment is still, in May 1936, being continued in reduced dosage. During the past three years her periods have been more normal in amount and without suffering. She has very rarely had a headache and never a severe one except during a period of time when treatment was discontinued for two months. Whereas she was previously an invalid, she has for the past three years been running the household for a large family.

CASE 5.—A married woman, aged 28, had severe menstrual cramps until her first pregnancy, which was terminated at three and one-half months by a therapeutic abortion because of pernicious vomiting. After this she had no cramps but instead each month a severe headache with nausea on the last day of her period. The duration of this complaint had been over a year, when in August 1933 she was given one course of gonadotropic factor from the urine of pregnancy. In February 1936 she reported that she had not had a headache since that time.

CASE 6.—A girl, aged 17, complained of a severe headache every month just before or after her periods, which began at 12½ years. During the past year the headaches had been much worse and appeared at other times of the menstrual cycle also. In October 1933 she was given one course of gonadotropic factor from pregnancy urine, following which she was entirely free from headaches except during one menstrual period, until last seen one and one-half years later.

CASE 7.—A nurse, aged 31, single, had been variously treated for headaches, often accompanied by nausea and vomiting, which always recurred two or three days before menstruation. In September 1933 she was given thyroid and one course of gonadotropic factor from the urine of pregnancy, which was followed by three symptom-free periods. The next month, while she was still taking thyroid, the headache recurred, though it was not so severe as originally. Following a second short course of gonadotropic therapy her periods remained symptom free and regular until July 4, 1935, when eighteen days after the onset of the previous period uterine bleeding began, which lasted for twenty-eight days and ceased after she received daily doses of from 1 to 2 cc. (125 to 250 rat units) of gonadotropic factor from pregnancy urine. It is of interest that after each of the first few of these large doses headache developed, the first headache of any sort she had had for nearly two years. X-ray studies of the patient's sella turcica show a complete bony bridging between the anterior and posterior clinoids.

COMMENT

Further detailed histories would be wearisome, but seventeen patients with menstrual migraine have been similarly treated and followed over a period of three years. All were relieved although some, usually those who had suffered most severely over the longer periods of time, have been unable to discontinue treatment entirely. This does not mean that all patients with such headaches would be relieved or even so treated. Many respond favorably to other methods of treatment, notably either the estrogen or estriol complex (emmenin). Others have suffered local and general reactions so that treatment was discontinued, as in the following case: A woman, aged 25, amenorrheic for two years, had migraine attacks usually at intervals of from four to six weeks. Repeated attempts were made to treat her with gonadotropic substance from pregnancy urine diluted with ten times the usual amount of distilled water. Treatment was begun with as little as 0.2 rat unit, but usually when a dose between 2 and 4 units was reached she would have a severe reaction with fever as high as 103 F. It was subsequently found that an injection of an estrogenic preparation would quickly relieve her headaches, which eventually after four years of amenorrhea disappeared spontaneously. She also had a small, completely bridged sella, not included in the summary of x-ray studies which appears later.

Therapy with gonadotropic factor from pregnancy urine has also been tried in cases of migraine not associated with menstruation, without relief; in one case there was a decided aggravation of the attacks.

Of the seventeen women, eight had previously had estrogen therapy. Of these, four had been moderately benefited, three were unimproved and one complained that her headaches were much worse.

X-ray studies of the sella turcica were made in eleven cases. Four of these showed complete bony bridging of the interclinoidal space and three others showed small sellae almost bridged over, while only four were normal. It is not within the scope of this paper to enter the controversy concerning the possible connections between abnormal sellae and menstrual headaches, and this observation is entered merely as a matter of record.

TECHNIC EMPLOYED

What is here meant by a month's course of treatment? After experimenting with gonadotropic factor from pregnancy urine for the preceding two years, finally, early in 1933, I evolved the following routine: Beginning on the fifth to the seventh day after the onset of the menstrual flow a small dose, usually ranging from 2 to 6 rat units, is given; the dose is slightly increased daily until the tenth day, then rapidly increased, reaching a maximum of from 50 to 125 rat units on the fourteenth day, after which from 25 to 50 units is given daily until the onset of the next menstrual period.

COMMENT

The theory on which this routine was originally based was erroneous, as will appear later in the discussion, but the fact of relief of menstrual migraine remains. Psychic effect can be ruled out first because of the number of patients involved, all with a special type of migraine, and, secondly, because most of them had been previously treated without relief over a long period of time, some of them by me, and were pathetically accustomed to hypodermics. Patient 1 had some time previously been given 50 units of a similar pregnancy urine preparation three times weekly for four weeks without benefit.

What then is the action of gonadotropic substance from pregnancy urine in relieving menstrual migraine? At the time of its adoption the foregoing routine of administration was based on the then current theory [12] that small doses early in the menstrual cycle produce follicular stimulation and that the large doses induce ovulation and luteinization at the time they should normally occur, after which only small doses are needed to maintain luteinization. Viewed in the light of later experimentation this theory is probably invalid, since in the macaque monkey no ovarian stimulation is ever obtained,[13] and Geist [14] from his preoperative experiments on women concludes that "apparently there is no stimulation of the follicle, rather an arrest of follicular development." However, as Engle [13] pointed out, the macaque monkey never at any time even during pregnancy excretes gonadotropic substance in the urine and hence the analogy to the human being must not be too closely drawn. Also in Geist's experiments enormous doses of gonadotropic substance from the urine of pregnancy [15] varying from 600 to 2,200 rat units were given over a period varying from thirty-six to 100 hours, as much as 600 rat units being given in one day in divided doses. This is far in excess of any therapeutic dose, but even so it is of interest that Geist records that the intensity of reaction in the ovary seems to bear a direct relationship to the amount of substance injected. The effect of varying therapeutic doses of gonadotropic factor on the human ovary needs further study before dogmatic statements can be made.

Moreover, recent experimentation led by Evans [16] and Mazer and Katz [17] has shown that the combination of gonadotropic factor from pregnancy urine and the "synergist" from the anterior pituitary produces much greater ovarian stimulation than could be accounted for by the simple sum of the two extracts. Is it not probable, then, that the women in the present report had sufficient pituitary activity of their own to obtain the clinical effect of this combined therapy? The fact that they were all menstruating more or less regularly shows that they did not have a severe form of pituitary deficiency. With this amendment to the original theory, it would seem that this may be a valid hypothesis.

This fits in well with Riley, Brickner and Kurzrok's conclusions that the fundamental mechanism in the production of migraine is "one of hypophyseal hyperfunction or of ovarian hypofunction." For if the technic employed stimulates the ovary to a greater production of estrogen, this through its claimed depressant action on anterior pituitary gonadotropic hormone production would correct a previously existing ovarian hypofunction and anterior pituitary hyperfunction and by restoring the balance between these hormones remove the cause of the migraine attack.

One other possibility must be mentioned. Perhaps lending some support to the allergist's view of migraine is the fact that of the seventeen women four, or 24 per cent, gave a family history of allergy; eight, or 47 per cent, had themselves one or more of the accepted manifestations of allergy; four, or 24 per cent, gave a family history of migraine, and two, or 12 per cent, had a family history of epilepsy. If the migraine attacks were due to a sensitization to gonadotropic factor, this technic of beginning with a small dose of gonadotropic factor extracted from the urine of pregnancy and increasing very gradually to the larger doses may have simply desensitized the patients to gonadotropic factor and thus prevented their attacks. On the other hand, here again it may have been an ovarian stimulation which prevented the excessive or unopposed production of gonadotropic substance at the time of menstruation.

Still unexplained, however, and seemingly ignored in published papers on the estrogenic-gonadotropic balance in migrainous women are two facts: first, that so many women subject to migraine have no attacks during pregnancy, when there is an excess of both the luteinizing factor and estrogen, and, second, that in most women the migraine attacks cease after the menopause, when there is little or no estrogen but an excess of follicle stimulating factor. The answers to these problems will have to await further study.

CONCLUSION

It must be reiterated that I am considering only one of the many facets of the migraine problem and am dealing with a highly selected group of patients afflicted with a particular type of headache. With this in mind it seems fair to conclude that the results here reported tend to confirm the hypothesis that a leading factor in the production of menstrual migraine is either an ovarian or an anterior pituitary dysfunction, and probably an ovarian hypofunction or pituitary hyperfunction.

12. Mazer, Charles, and Goldstein, Leopold: Clinical Endocrinology of the Female, Philadelphia, W. B. Saunders Company, 1932, pp. 102, 106, 266, 270.
13. Engle, E. T.: Biological Differences in the Female Macacus Monkey to Extracts of the Anterior Pituitary and of Human Pregnancy Urine, Am. J. Physiol. **108**: 145 (Oct.) 1933.
14. Geist, S. H.: Reactions of the Mature Human Ovary to Antuitrin-S, Am. J. Obst. & Gynec. **26**: 588 (Oct.) 1933.
15. In this experiment antuitrin-S was used.
16. Evans, H. M.; Simpson, M. E., and Austin, P. R.: Further Studies on the Hypophyseal Substance Giving Increased Gonadotropic Effects When Combined with Prolan, J. Exper. Med. **58**: 345 (Nov.) 1933.
17. Mazer, Charles, and Katz, Benjamin: Clinical Evaluation of Combined Prolan and Anterior Pituitary Therapy, Endocrinology **17**: 709 (Nov.-Dec.) 1933.

SUMMARY

1. The result of treatment with gonadotropic factor extracted from the urine of pregnancy in seventeen cases of menstrual migraine followed over a period of three years was relief in all. These were selected cases, all with a special type of migraine.

2. In only four of the eleven cases studied roentgenologically was a normal sella turcica found.

3. To explain the results, the following hypothesis is submitted: These seventeen women were all menstruating more or less regularly and therefore could not have had a severe form of pituitary deficiency. Consequently administering gonadotropic substance from pregnancy urine to them was equivalent to the combined therapy of this factor and the "synergist" from the anterior pituitary, which combination has been shown to produce maximum ovarian stimulation.

4. The results tend to confirm the hypothesis that a leading factor in the production of menstrual migraine is an ovarian hypofunction, perhaps associated with an anterior pituitary hyperfunction.

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A QUANTITATIVE STUDY OF THE FRIEDMAN TEST FOR PREGNANCY

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What constitutes a positive reaction of the ovaries of the rabbit in the Friedman[1] modification of the Aschheim-Zondek test for pregnancy? Of what age and weight must the test animals be? What effect does the specific gravity and the reaction of the urine have on the outcome of the test? May the ovaries be examined always by the naked eye with the assurance of correct interpretation? Which is superior in accuracy, the original or the modified Friedman technic? How much blood serum must be used instead of urine when indicated and how accurate is the result? These and other questions occur to those using this important diagnostic procedure and, while numerous articles have been published about the Friedman test, the answers are not all available from one source.

In this study between 175 and 200 doe rabbits were employed. A few of these died before routine ether extraction of urine was begun. Urine specimens were obtained through the outside obstetric service from patients known to be pregnant. Blood serum was also obtained from such patients. The following data were recorded in each test: the animal's weight, color and breed, the patient's clinic number, which pregnancy and number of months, the specific gravity and reaction of urine, the exact technic, and the number of clear, ruptured and unruptured hemorrhagic follicles. In every case the ovaries were examined by the senior author with the aid of a low power binocular microscope (magnification about 12 diameters).

In extracting with ether, about 2 ounces (60 cc.) of the urine is placed in a separatory funnel with an equal quantity of ether and shaken thoroughly, after which the urine is drawn off. This should be done as a routine unless the specimen is known to be quite fresh. Extraction is especially desirable when the specimen has been shipped from a distance with tricresol or saponated solution of cresol as a preservative (2 drops to the ounce).

In examining the ovaries with the low power binocular one must look for the crater of the follicle where the ovum escaped. It is worth while to insert the tip of a teasing needle into the crater and to manipulate the albuminous material that clings to the crater and lies on one side of the ruptured follicle. It is also important to remember that ruptured follicles may not be hemorrhagic but at times are quite pale. In many instances ovaries would be read as negative without such careful examination. The discovery of only one ruptured follicle in only one ovary must be considered as a distinctly positive reaction.

The efficiency of the Aschheim-Zondek pregnancy test as well as of the Friedman modification has been so well established that in this study no attempt has been made to appraise its value. Consequently no mention is made of negative tests when of no significance in the quantitative investigation.

The urine or blood serum was injected into the marginal ear vein in the usual manner and the animals were killed in the majority of cases by injection of from 5 to 10 cc. of air into the vein, though a few were killed by trauma.

RESULTS

1. *Number of Ruptured and Unruptured Follicles.*—(*a*) There were seventy-five positive tests with the common modification of the Friedman test of administering 10 cc. of urine twice with a twenty-four hour interval and killing the animal forty-eight hours after the first injection. In fifty-three instances the ovaries presented both ruptured and unruptured follicles; in twenty-two cases there were no ruptured follicles though unruptured follicles were present; in only one case was there no unruptured follicle when ruptured follicles were found. In the entire series the average number of ruptured follicles per test (both ovaries) was 1.55; the average number of unruptured follicles per test (both ovaries) was 6.18. The percentage of animals with ruptured follicles was 70.67. In no instance was a corpus luteum visible to the naked eye. Corpora haemorrhagica are not transformed into corpora lutea (visible to the naked eye) in the ovary of the rabbit within forty-eight hours after copulation or the injection of urine from pregnant women.

(*b*) When the original Friedman method of injection was used (4 cc. three times a day for two days, killing the animal forty-eight hours after the first injection) the results were positive in twenty-seven instances. In nineteen cases the ovaries were found to have both ruptured and unruptured follicles; in eight cases there were no ruptured follicles, though unruptured follicles were present; in no instance were unruptured follicles absent. The average number of ruptured follicles was 1.7 and the average number of unruptured follicles was 8.7.

The percentage of cases in this series that showed ruptured follicles is almost identical with the percentage in series *a*: 70.37 per cent compared with 70.67 per cent.

(*c*) In a series of nine cases the test was positive when the doe was killed thirty-six hours after one injection of 10 cc. of urine. In six cases there were both ruptured and unruptured follicles; in three cases there were no ruptured follicles, though unruptured

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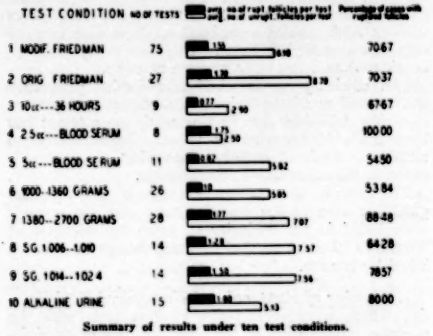
1. Friedman, M. H., and Lapham, M. E.: A Simple, Rapid Procedure for the Laboratory Diagnosis of Early Pregnancies, Am. J. Obst. & Gynec. 21: 3405 (March) 1931.

follicles were present; in two instances there were no unruptured follicles and only one ruptured follicle. The percentage of cases in this series which showed ruptured follicles was 67.67 and the average number of ruptured follicles when present was only 0.77. The average number of unruptured follicles was also small (2.9).

(*d*) When 2.5 cc. of blood serum was given in one injection and the doe killed thirty-six hours later, the test was positive in eight instances and both ruptured and unruptured follicles were present in each case (though there was only one ruptured follicle in three cases).



Summary of results under ten test conditions.

The average number of ruptured follicles was 1.75 and the average number of unruptured follicles was 2.5.

(*e*) When one injection of 5 cc. of blood serum was made and the animal killed thirty-six hours after the injection, the test was positive in eleven instances. In six cases there were ruptured follicles, unruptured follicles also being present (54.5 per cent). The average number of ruptured follicles was 0.82 and the average number of unruptured follicles was 5.82.

2. *Age and Weight of Test Animals.*—It is said to be desirable to use rabbits that are at least 6 months old. Since we did not raise our own test animals we had no way of being certain how old each animal was. Therefore we depended on the weight. Here again consideration must be taken of the fact that different breeds mature at different weights. It is often stated that the test animal should weigh at least 4 pounds (1,814 Gm.).

We ran a series of twenty-six does of three breeds (New Zealand, Belgian and Chinchilla) in which no animal weighed more than 3 pounds (1,363 Gm.). The weights ranged from 1,000 to 1,360 Gm. and the average weight was 1,272.88 Gm. Only two of the animals weighed less than 1,200 Gm. (1,000 and 1,025 Gm.).

Fourteen of these animals were subjected to the Friedman 10-10 modification and eight to the original Friedman test; four were given one 10 cc. injection and killed in thirty-six hours.

The test was positive in every case. In fourteen instances there were both ruptured and unruptured follicles. In twelve cases there were no ruptured follicles, though unruptured follicles were present. Unruptured follicles were present in every case.

The average number of ruptured follicles was 1. The average number of unruptured follicles was 5.85. Ruptured follicles were present in 53.84 per cent of the cases. For the purpose of comparison, twenty-six results with rabbits weighing more than 3 pounds (from 1,380 to 2,700 Gm.; average, 1,754.61 Gm.) were averaged. In eleven the Friedman modification was used, in seven the original Friedman test, in two the injection of one 10 cc. quantity killing the animal in thirty-six hours, in three 2.5 cc. blood serum and in three 5 cc. of blood serum. The average number of ruptured follicles was 1.77, unruptured 7.07, and in 88.48 per cent ruptured follicles were present. It can readily be seen that quantitatively the results were better with the heavier rabbits.

3. *Specific Gravity of Urine.*—Selecting eight instances with urines of specific gravity each of 1.010, four with 1.008, one with 1.007 and one with 1.006, we found that the test was positive in each case for an average of 1.28 ruptured follicles, 7.57 unruptured and with ruptured follicles in 64.28 per cent of the tests. In the 1.007 specimen there was only one ruptured follicle and none unruptured. In the 1.006 specimen there were no ruptured follicles and five were unruptured. The tests were negative in four instances with specific gravities of urine from pregnant women of 1.007, 1.006, 1.005 and 1.005.

For comparison, fourteen tests were selected in which the specific gravity of the urines ranged from 1.014 to 1.024, with an average of 1.018. The average number of ruptured follicles was 1.5 and of unruptured follicles 7.56, and ruptured follicles were present in 78.57 per cent of the tests.

While this record is not much better than that of the 1.006 to 1.010 group, the negative tests in the 1.005 to 1.007 group are significant.

4. *Reaction of Urine.*—In fifteen of our tests the reaction of the urine was alkaline. The average number of ruptured follicles was 1.8 and of unruptured 5.13, and there were ruptured follicles in 80 per cent of the cases. These results do not compare unfavorably with those given in 1 *a* and 1 *b*.

This is in accordance with the observations of Elden and Fellows,[2] who found that although the anterior pituitary-like hormone of the urine is most potent at a p_H of from 6.1 to 7.3 and that the potency is reduced by alkali content, their observations in no way affected the Friedman modification of the Aschheim-Zondek test because large quantities of urine (from 5 to 10 cc. on each injection) are used.

Some of our test animals died during or immediately after injections and we considered the possibility of alkalosis as a cause of death. In order to test this point seven does were injected with alkaline urines of p_H from 7.4 to 8.4, but none of them showed any untoward effects from the injections.

CONCLUSIONS

1. The presence of one or more ruptured follicles in either ovary or both ovaries in this test constitutes a positive reaction. The presence of several unruptured hemorrhagic follicles in both ovaries (usually two or more in each ovary) is also a positive reaction. Unruptured hemorrhagic follicles are red; black follicles of all sizes have no significance and must be disregarded. (Corpora lutea visible to the naked eye do not develop within forty-eight hours, nor can they be seen with the

2. Elden, C. A., and Fellows, M. D.: Relation of Potency of Anterior Pituitary-like Hormone to Hydrogen Ion Concentration, Proc. Soc. Exper. Biol. & Med. 33: 1397 (June) 1935.

low power binocular microscope. Only high magnification of histologic sections could show them.)

2. In many cases the low power binocular microscope is necessary in order to reach a correct decision and will prevent repetition of the test in such cases. For recognizing ruptured follicles its use should be a routine.

3. The common modification of the Friedman test is satisfactory, though the original Friedman technic gives better quantitative results. One 10 cc. injection of urine with examination in thirty-six hours is not nearly so successful as the double injection, and better results would be obtained with two injections and examination in forty-eight hours.

4. Rabbits weighing more than 3 pounds will give better results than those weighing less, and 3 pounds is a safe minimum.

5. It is not necessary to acidify the urine, though it is better to do so, as the hormone present is more active in an acid medium. Urines do not kill test animals because of alkalinity.

6. It is safer not to use urines with a specific gravity of less than 1.008. If it is necessary to use such urines, the quantity injected in each instance should be increased at least 50 per cent.

SUNRAY HEMANGIOMA OF BONE

WITH SPECIAL REFERENCE TO ROENTGEN SIGNS

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CHICAGO

Only twenty-one cases of hemangioma involving the skull have been found in the literature. Of 1,831 neoplasms of bone recorded at the bone registry, thirteen have been hemangiomas. Of these, only three have involved the skull. In Christensen's [1] collection of 918 neoplasms of bone, less than 1.5 per cent were hemangiomas. Geschickter and Copeland [2] report only twelve cases of hemangioma of all types of bones in a group of more than 1,700 neoplasms of bone. These authors call attention to the fact that most of the earlier reports failed to distinguish hemangioma from sarcoma. It is interesting, in this respect, that the case which I am about to report was thought to be sarcoma when first seen in 1921. The clinical course and roentgen appearance of hemangioma of the skull over a long period is of moment, as tumors of this character, as a rule, have been considered malignant and removed fairly early.

REPORT OF CASE

F. S., a girl, aged 11 years, came to the Children's Memorial Hospital in 1921 because of a swelling on the left side of the scalp. This had first been noticed four years previously, following a slight bump on the head while playing. There was very little pain at that time and the swelling did not attract special attention until just before the patient came to the hospital. At this time a mass protruded from the left parietal bone for a distance of 3.5 cm. The patient was well developed and well nourished and appeared healthy in every way. The mass on the head was not tender and its surface was smooth to touch. There was no exophthalmos and the movements of the eyes were normal. The blood pressure was 118 systolic, 84 diastolic, the pulse 84, the temperature 98.6 F.

After one week's observation in the hospital, during which time roentgenograms of the skull (figs. 1 and 3) had been secured and showed radiating spicules of bone within the tumor mass, it was thought that an osteogenic sarcoma most likely accounted for the tumor mass. Under ether anesthesia, removal was attempted by Dr. A. H. Montgomery. Trephine holes were made in the skull. These were followed by profuse bleeding, which could not be controlled with Horsley's wax. The bone was then cut between the trephine openings, following which the bleeding became so severe and so difficult to control that it was decided to discontinue the operation. The patient received 1,800 cc. of saline solution under the breast immediately while on the operating table, and one hour later 1,600 cc. intravenously. Two hours later she was given 150 cc. of citrated blood. Six hours later 10 cc. of horse serum was given into the buttocks. After ten hours the patient improved slightly, but the oozing of blood continued and the patient was given 2 cc. of hemostatic serum intravenously. Although slight bleeding continued for several days, the condition finally improved and the patient left the hospital at the end of five weeks. The parents were advised to have the patient return for roentgen therapy. This they failed to do.

The patient was lost track of until 1936, then 26 years of age. In the meanwhile, the x-ray films, presenting the "sunray" pattern, had been noted, and because of previous experience with "sunray" tumors involving flat bones, which had been proved to be hemangiomas, I thought that that condition most likely accounted for the x-ray appearance in this case and that the patient was still living. She was ultimately located and additional roentgenograms of the skull were made (figs. 2 and 4). The patient, now 26 years of age, is married and has a child 2 years old. She believes that the tumor has not grown in the past six years. The tumor is covered with normal soft tissue and has not interfered with the patient's health.

COMMENT

The "sunburst" appearance on roentgenograms of tumors of bone have in the past played an important part in facilitating a preoperative diagnosis of osteogenic sarcoma. Many of the earlier reported cases in which the skull was involved were mistakenly called

Fig. 1.—F. S., aged 11 years, showing sunray hemangioma of the left parietal bone. Growth started four years previously, following a bump on the head.

sarcoma. Occasionally the histologic diagnosis was changed to hemangioma after the patient continued to live beyond the expected period. A typical example was given by Cushing [3] in 1923 of a patient still living three years after a postoperative histologic diagnosis of melanotic sarcoma. Cadman expressed doubts regard-

From the X-Ray Department of the Children's Memorial Hospital.

1. Christensen, F. C.: Ann. Surg. 81:1074 (June) 1925.
2. Geschickter, C. F., and Copeland, M. M.: Tumors of Bone, Lancaster (Pa.) Press, 1932.
3. Cushing, Harvey: Surgical End Results in General, with a Case of Cavernous Hemangioma of the Skull in Particular, Surg., Gynec. & Obst. 39:303-308 (March) 1923.

ing a three year survival of a patient with a melanotic sarcoma of the skull, and another section was removed from the specimen and studied. It was then diagnosed cavernous hemangioma. Cushing stated that "although

Fig. 2.—Same case as in figure 1 fifteen years later. The tumor is larger and contains relatively more bone. The anterior and posterior trephine openings are still evident. Vessel grooves are prominent.

clinically and histologically the diagnosis of malignancy seemed warranted, the x-ray did not tend to confirm this diagnosis."

The patient under discussion in the present report fared better eventually than the majority of other

Fig. 3.—Anteroposterior view at 11 years. The tumor mass does not encroach on the brain because the inner table is preserved.

reported cases.[4] Because of Montgomery's last minute decision not to remove the tumor, the patient is living and enjoying good health, and there is no void in the skull tables. On account of the profuse hemorrhage, which could hardly be controlled, it is unlikely that she would have survived had the operation been carried to completion.

The published roentgenograms of proved cases of hemangioma of *flat* bones have for the most part shown strikingly similar patterns of density. This was nicely brought out in Bucy and Capp's[4] study of their own cases and their review of previously recorded cases. It has been my privilege to see a roentgenogram of one of their cases, in which there was a large sunray hemangioma of the scapula, six years after their report. The growth is no larger and the bone is of increased density on the roentgenograms, apparently because of a greater deposit of bone. These changes occurred rapidly following roentgen therapy and no growth has been noted since the first course of roentgen therapy. The same change seems to have occurred in the case here reported, but at an unusually slow rate, requiring fifteen years (figs. 2 and 4) without roentgen therapy. It seems most likely that the tumor would have resolved into a small solid mass of bone early in its course had roentgen therapy been given early when the tumor was predominantly vascular. It is interesting, in reviewing the published cases, to find in most instances when hemangiomas were mistaken for malignant neoplasms that flat bones were involved. Sarcoma of flat bone is less prone to present a sunray appearance. Sometimes a coral reef pattern of density is presented by hemangioma and only infrequently has there been erosion of bone by pressure producing a smooth defect. When a smooth defect is produced, the roentgenogram is of little value in differentiating hemangioma from other large primary tumors within the skull. Occasionally hemangioma, like meningioma, burrows its way along the skull tables, but when spicule formation has taken place in meningioma the spicules most often do not radiate from a central point but are more parallel and cover a larger area on the skull.[2]

Fig. 4.—Anteroposterior view at 26. Lighter exposure shows coarse bony spicules maintaining the "perfect" sunburst pattern.

Tumors with radiating spicules of bone have been found most often in roentgenograms of long bones and have proved to be malignant neoplasms (osteogenic sarcoma). Likewise, hemangiomas of long bones have produced evenly spaced divergent trabeculations, as well as the so-called soft soap bubble appearance, loculations with paper-like thin walls. In both hemangioma and sarcoma the periosteum is elevated gradually by the new growth, and spicules of bone are formed which elongate at right angles to the advancing periosteum. Usually in sarcoma the growth has occurred too rapidly

4. Bucy, P. C., and Capp, C. S.: Primary Hemangioma of Bone with Special Reference to Roentgenologic Diagnosis, Am. J. Roentgenol. **35**: 1-35 (Jan.) 1936. Cushing,[3] Dikansky, M.: Cavernous Hemangioma of Cranium: Two Cases, Deutsche Ztschr. f. Chir. **230**: 648-655, 1932. Ehrmann: Mus. de la Fac. de méd. de Strasbourg, No. 3, I, 1847, cited by Schone, G.: Ueber einen Fall von Myelogenen Hämangiom des Os Occipitale, Beitr. z. path. Anat. u. z. allg. Path. **71**: 685-701 (suppl.) 1905. Erös, G.: Multiples Hämangiom der Schädelknochen, Centralbl. f. allg. Path. u. path. Anat. **48**: 532-538 (Oct. 30) 1928. Kaufmann, E.: Lehrbuch der speziellen pathologischen Anatomie fur Studierende und Aerzte, Berlin, W. de Gruyter & Co., 1922, p. 937. Schinz, H. R., and Uehlinger, E.: Ergebn. d. med. Strahlenforsch. **5**: 418-424, 1931.

and there has been too much destruction of preexisting bone for the perfect "sunburst" effect noted in the benign, slowly growing hemangioma. The fact that sarcoma of the long bones has been more often encountered no doubt accounts for the frequently mistaken diagnosis when the sunray hemangioma of flat bones has been present. Hemangioma of long bones only seldom has produced the more imperfect "sunburst" of sarcoma. As a rule its structure has been more complete, resembling more an osteochondroma or an overgrown cystlike structure, often suggesting its benign character. The cortex of involved bone is not broken into bits but is replaced by the hemangioma in a slow, most orderly fashion.

An almost constant x-ray appearance has been produced, according to numerous recent reports,[5] when hemangiomas involve vertebral bodies. Vertical streaks of parallel densities are seen on the roentgenograms somewhat resembling corduroy cloth. Older persons are especially prone to have this type of tumor. Only

Fig. 5 (case reported by T. D. Overend).—Hemangioma of occipital bone, showing the typical radiating spicules which arise from the space between the skull tables, as in the case here reported. (Hemangioma of Occipital Bone, Brit. J. Radiol. 6: 626 [Oct.] 1933.)

rarely do the early vertical striations change to a "blown-out" appearance or to a "mushrooming" of the vertebra. No other benign tumor has so uniformly produced these parallel densities.

The tendency for hemangioma of bone to produce a somewhat characteristic picture on roentgenograms seems to be due in part to the type of bone involved. Hemangioma of bone should be considered a possibility in all "sunburst" tumors of bones, but a malignant neoplasm should be considered equally probable when there is a sunray pattern on roentgenograms of long bones, especially if there has been active destruction of bone. Sharply defined, well organized trabeculae or spicules favor hemangioma. No tumor of this sort should be removed without a biopsy first, with the surgeon and pathologist both thinking of a benign hemangioma as a possibility.

Although gross evidence in many surgically removed hemangiomas of bone favors primary involvement of bone, opinions of pathologists seem to favor secondary involvement. Secondary involvement of bone by large, soft tissue hemangiomas are apt to erode bone, leaving a smooth edged defect, as in other tumors (fig. 4). Growth is apt to occur rapidly, and there is no spicule formation.

5. Bailey, Percival, and Bucy, P. C.: Cavernous Hemangioma of the Vertebrae, J. A. M. A. 92: 1748 (May 25) 1929. Ireland, J.: Hemangioma of a Vertebra, Am. J. Roentgenol. 29: 372-378 (Sept.) 1932.

SUMMARY

The roentgenographic changes of hemangioma of the skull in a child aged 11 years, first observed in 1921 and again fifteen years later, were studied. Excepting for a large mass on the head, the patient's health has not been impaired in any way. Hemangioma of flat bones produces a beautiful sunray formation on roentgenograms. Hemangioma of long bones often produces a "loose soap bubble" appearance but almost as frequently the sunray pattern of density. The latter is often confused with osteogenic sarcoma of bone, which also produces divergent spicules of bone. While hemangioma is less destructive, slower growing and less painful and produces the more clearly outlined trabeculation, a biopsy should be obtained before removal is attempted. Rarely should hemangioma of bone be removed. When hemangioma involves vertebrae, a vertical striated appearance is produced which is almost characteristic of this one type of tumor. Therefore the kind of bone involved by the tumor in a given case is of prime importance in weigh-

Fig. 6.—W. M., aged 6 years. Anteroposterior view showing a circular area of decreased density of the frontal bone. There is loss of the inner table due to erosion by contact from the tumor (meningioma) within the skull. This appearance should not be confused with hemangioma showing growth from cancellous space. Soft tissue hemangioma and primary brain tumors as well as meningioma have been known to produce this type of bone erosion.

Fig. 7.—Lateral view of same case as shown in figure 6.

ing roentgen evidence. Roentgen or radium therapy has the same favorable effect on hemangioma of bone as on hemangioma of soft tissue if treatment is early before dense bone is deposited within the tumor. Even later it is of definite benefit in arresting growth. The sensitivity of benign hemangioma to roentgen therapy must not be interpreted as evidence favoring malignancy.

1150 North State Street.

LOCALIZATION OF VENTRICULAR EXTRASYSTOLES

IN A HUMAN HEART WITH RIGHT AXIS DEVIATION

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The localization of the origin of ventricular extrasystoles and of the lesion in bundle branch block is still subject to dispute. Three separate ideas prevail:

1. The classic interpretation based on the fundamental studies of Lewis [1] and of Rothberger and Winterberg [2] is that the main ventricular deflection in left ventricular extrasystoles and in right bundle branch block is upright in lead 1 and inverted in lead 3. Right ventricular extrasystoles and left bundle branch block have an opposite configuration. This conception is based on experimental work performed on dogs.

2. The new terminology based on the observations of Barker, MacLeod and Alexander,[3] Oppenheimer and his collaborators [4] and Wilson [5] is exactly the opposite of the classic interpretation. This conception has been accepted by most but not by all authorities in this field.

3. Finally there is the opinion of Katz [6] that localization of extrasystoles and bundle branch block is impossible in man.

The recent observations of Kountz and his co-workers [7] are of interest. Human hearts were revived immediately after death and studied in regard to localization of ventricular extrasystoles and bundle branch block.[7a] In all eight instances in which the human heart was stimulated the experimentally produced extrasystoles were similar in configuration to those found by Barker, MacLeod and Alexander.[3] The right and left bundle branches were cut in five instances and the results confirmed the observations of Oppenheimer and his co-workers [4] that the common type of bundle branch block is due to a lesion of the left bundle branch, while the unusual type is due to lesions of the right branch. Their studies seem ot be a complete confirmation of the new terminology of the electrocardiogram. It was later found [7b] that when a dog's beating heart was placed in the human pericardial cavity so that a normal or left axis deviation resulted, the electrocardiograms of experimentally produced extrasystoles and bundle branch block were similar to those found in the human hearts. However, if the dog's heart was rotated so that a right axis deviation resulted, the configuration of the electrocardiograms of the extrasystoles and bundle branch block corresponded to the classic interpretation and was opposite to that found in the presence of left axis deviation. Recently Abramson and Weinstein [8] showed in cats that the direction of the major ventricular deflection in lead 1 changes at a line of transition which does not strictly divide the left from the right ventricle. A shift in this line of transition on the heart occurred with rotation of the heart and change in electrical axis. Because of these observations it was felt important to study experimentally produced ventricular extrasystoles in the living heart with a right axis deviation. Recently we have had such an opportunity and the results of these observations form the basis of this report:

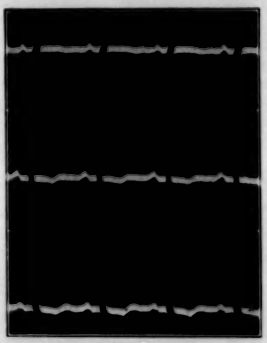

Fig. 1.—Electrocardiogram before operation, showing right axis deviation.

A laborer, aged 38, entered the Mount Sinai Hospital complaining of ascites of about eighteen months' duration. His present illness began one and a half years before admission, at which time he noticed tenseness of the abdomen, vague pains in the epigastrium and swelling of the ankles. Fluid soon began to accumulate in the right pleural cavity. Mercurial diuretics and repeated tapping of the chest and abdomen were resorted to.

On physical examination on admission the patient was pale, thin and slightly cyanotic but not dyspneic or orthopneic. The veins of the neck were distended and were observed to fill during inspiration. The heart was of normal size and shape and the sounds were of good quality. There was no shift of the heart in any position. No systolic retraction was seen. The blood pressure was 105 systolic, 85 diastolic. No pulsus paradoxus was present. The liver was enlarged 5 cm. below the costal margin and ascites and dependent edema were present. The electrocardiogram (fig. 1) showed a regular sinus rhythm and a right axis deviation. The T wave was iso-electric in lead 1 and inverted in leads 2 and 3. In the right lateral position a slight shift in axis deviation occurred, but none occurred in the left lateral position.

From the Medical Service and Cardiographic Laboratory of the Mount Sinai Hospital.
Dr. Prinzmetal is Richard and Ella Hunt Sutro Fellow for Cardiovascular Research and Dr. Dack is Research Fellow in the Cardiographic Laboratory.

1. Lewis, Thomas: The Mechanism and Graphic Registration of the Heart Beat, London, Shaw & Sons, 1925.

2. Rothberger, C. J., and Winterberg, H.: Studien ueber die Bestimmung des Ausgangspunktes ventrikularen Extrasystolen mit Hilfe des Elektrokardiogramms, Arch. f. d. ges. Physiol. **154**: 571, 1913.

3. Barker, P. S.; MacLeod, A. G., and Alexander, J.: Excitatory Process Obtained in the Human Heart, Am. Heart J. **5**: 720 (Aug.) 1930.

4. Oppenheimer, B. S., and Pardee, H. E. B.: The Site of the Cardiac Lesion in Two Instances of Intraventricular Heart Block, Proc. Soc. Exper. Biol. & Med. **17**: 177, 1920. Oppenheimer, B. S., and Oppenheimer, E. T.: The Site of the Cardiac Lesion in Ten Cases of Intraventricular Block Including Bundle Branch Block and Arborization Block, Tr. A. Am. Physicians **45**: 427, 1930; Right and Left Bundle Branch Block in the Human Heart, Abstracts, XIV International Physiologic Congress, Rome, Aug. 31, 1932.

5. Wilson, F. N.; MacLeod, A. G., and Barker, P. S.: The Order of Ventricular Excitation in Human Bundle Branch Block, Am. Heart J. **9**: 305 (Feb.) 1932.

6. Katz, L. N.: Recent Advances in the Interpretation of Electrocardiograms, J. A. M. A. **97**: 1364 (Nov. 7) 1931. Katz, L. N.; Landt, H., and Bohning, A.: The Delay in the Onset of Ejection of the Left Ventricle in Bundle-Branch Block, Am. Heart J. **10**: 681 (June) 1935.

7. (a) Kountz, W. B.; Prinzmetal, Myron, and Pearson, E. F.: The Effect of Position of the Heart on the Electrocardiogram: I. The Normal Electrocardiogram in Revived Perfused Human Hearts in Normal Position, Am. Heart J. **10**: 605 (June) 1935. (b) Kountz, W. B.; Prinzmetal, Myron, and Smith, J. R.: II. Observations upon the Electrocardiogram Obtained from a Dog's Heart Placed in the Human Pericardial Cavity, ibid. **10**: 614 (June) 1935; (c) III. Observations upon the Electrocardiogram in the Monkey, ibid. **10**: 623 (June) 1935.

8. Abramson, D. I., and Weinstein, J.: A Basis for the Analysis of Variations in the Form of Electrocardiographic Curves Resulting from Experimental Premature Contractions, Am. J. Physiol. **115**: 569 (May) 1936.

A diagnosis of chronic constrictive pericarditis (concretio cordis) was made and partial pericardiectomy was performed on two occasions by Dr. Harold Neuhof. At the first operation the heart was exposed through an anterior mediastinal incision, after removal of the second to sixth left costal cartilages and adjacent portions of ribs and part of the sternum. The entire heart was found encased in a white, fibrous, immobile membrane about 0.5 cm. thick. The fibrous tissue was dissected away down to the epicardium from the apical region of the left ventricle and anterolateral surface of the right ventricle. The total area of removed pericardium measured about 8 cm. in diameter. An effort was now made to stimulate the right

Fig. 2.—Extrasystoles produced experimentally by stimulation of the upper lateral region of the left ventricle.

ventricle, but no extrasystoles were induced because of insufficient stimulating current (15 volts).

Since there was very little improvement following this procedure, a second operation was performed. The heart was now approached through a left lateral transpleural incision and the thick pericardium removed from the anterolateral surface of the left ventricle for an area of from 6 to 8 cm. in diameter. The heart's action improved distinctly, and the pulsations, which were scarcely visible at the beginning of the operation, were now pronounced and strong. The systolic blood pressure, which was previously 105 mm., rose 20 mm. at this stage of the procedure.

An attempt was made to stimulate the left ventricle, which was now completely exposed over a wide area. The stimulating electrode was similar to the one devised by Barker, MacLeod and Alexander.[9] A current of 20 volts repeated sixty times a minute was first used. Since no extrasystoles occurred, the voltage was gradually increased to 45 volts. The upper part of the left ventricle in a region about 3 cm. to the left of the septum was stimulated. This area was somewhat more lateral to points designated 1 and 2 by Barker, MacLeod and Alexander. Extrasystoles occurred immediately following the stronger electrical stimulus. Leads 1 and 3 were recorded simultaneously with a two-string galvanometer. For a control period of five minutes with lesser voltage and another period of five minutes immediately after the operation, no extrasystoles were found. Nor were spontaneous extrasystoles ever present in eleven routine electrocardiograms taken before and after the operations.

Following the second operation a marked clinical improvement occurred and the signs of obstruction of venous return to the heart disappeared. The latter was now covered only by a thin layer of skin and subcutaneous tissue, and a well marked precordial pulsation could be seen and felt. It had been observed during both operations that the surface of the heart in contact with the chest wall between the sternum and the left nipple consisted mainly of the right ventricle. It was now found that extrasystoles could easily be induced by tapping the thin chest wall overlying the right ventricle. Four points within the nipple line were arbitrarily chosen (fig. 4). This procedure was carried out on four separate occasions.

RESULTS

1. Left ventricular extrasystoles: The electrocardiograms resulting from the extrasystoles induced by electrical stimulation of the left ventricle are shown in figure 2. Eleven ventricular extrasystoles, all of similar configuration, occurred in the two minute period during stimulation with 45 volts. It may be seen that the main deflection is slightly but definitely upright in lead 1 (approximately 2 millivolts in height) and also upright in lead 3 (approximately 10 millivolts in height). The right axis deviation during this procedure is not as marked as in the other tracings, owing to the rotated position of the patient.

2. Right ventricular extrasystoles: Mechanical stimulation of the right ventricle gave the following results (fig. 3): In three locations, points *A*, *B* and *C*, the main ventricular deflection was inverted in lead 1 and upright in lead 3. The main deflection of the extrasystoles resulting from stimulation of point D was upright in lead 1 and inverted in lead 3.

COMMENT

These observations demonstrate that the configuration of ventricular extrasystoles in the presence of right axis deviation does not conform to the newer interpretation, which postulates that the major ventricular deflection in lead 1 is always inverted in left ventricular extrasystoles and upright in right ventricular extrasystoles. An analysis of the literature reveals that there are two other cases in which extrasystoles were experimentally produced in the presence of a right axis deviation, and in both of these instances, as in the present one, the resulting electrocardiograms did not conform to the criteria of the new terminology. In the case reported by Lundy and Bacon[9] in which the heart was directly stimulated, extrasystoles arising from the apex of the left ventricle conformed to the new terminology. Extrasystoles induced by them by stimulating the basal part of the left ventricle were similar to those obtained in the present study on stimulating approximately the same area; in both the major deflection was upright in lead 1. In the report of Oppenheimer and Stewart,[10] in which a right axis deviation was also present, the

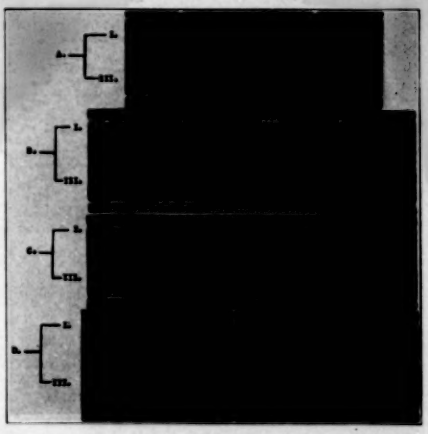

Fig. 3.—Extrasystoles produced by tapping points *A*, *B*, *C* and *D* on the anterior chest wall overlying the right ventricle.

extrasystoles corresponded to the classic interpretation and were distinctly opposite to that of the newer terminology. In their case the heart was not exposed but was stimulated through the skin, and so some uncertainty existed as to the exact location stimulated.

9. Lundy, C. J., and Bacon, C. M.: Premature Left Ventricular Beats from Electrical Stimulation of Exposed Human Heart, Arch. Int. Med. **58**: 30 (July) 1933.

10. Oppenheimer, B. S., and Stewart, H. J.: Dependence of the Form of the Electrocardiogram upon the Site of Stimulation of the Ventricles, J. Clin. Investigation **3**: 593 (Feb.) 1926.

In the remaining eleven cases [11] in which the human heart was directly stimulated and in which a normal or left axis deviation was present, the results were uniform and support the newer terminology. It is thus concluded that the newer terminology should be retained only in the presence of a normal electric axis or of a left axis deviation.

From the observations reported here, it may follow that the lesion in bundle branch block in hearts which previously had right axis deviation may be on the side opposite to that postulated by the new terminology. A certain amount of clinical and experimental evidence is in harmony with such a point of view.

The electrocardiographic configuration of right bundle branch block, according to the new terminology, is much more common in patients with conditions that ordinarily are associated with right axis deviation, such as mitral stenosis,[12] congenital heart disease [13] and cor pulmonale.[14] It is rare in conditions associated with left axis deviation. Follow-up studies of patients with left axis deviation have demonstrated that if bundle branch block develops it conforms to the usual type,[15] whereas if a right axis deviation has been present and bundle branch block develops, what is thought to be a right bundle branch block according to the newer terminology occurs.[14] Katz and his co-workers have shown that the configuration of bundle branch block in man [16] and in dogs [17] can be reversed by changing the position of the heart, a procedure which alters axis deviation.[18] When the heart of a dog with experimentally produced right bundle branch block was rotated so that the right ventricle was anterior, a complete reversal in the form of the bundle branch block occurred. This procedure has been shown to cause a right axis deviation.[18] In mitral stenosis the heart is frequently rotated in this direction because of the large right ventricle.

Fig. 4.—Chest wall of patient showing the four arbitrary points *A*, *B*, *C* and *D* at which extrasystoles from the right ventricle were induced by tapping.

CONCLUSIONS

1. Left ventricular extrasystoles were experimentally produced during a surgical operation by direct electrical stimulation of the upper part of the left ventricle about 3 cm. lateral to the septum, in a patient whose electrocardiogram showed right axis deviation. Following the operation right ventricular extrasystoles were mechanically induced by tapping four points on the chest wall overlying the right ventricle.

2. The major ventricular deflection of the extrasystoles induced from certain sites on the left ventricle was upright in lead 1. The major deflection of the extrasystoles arising from the right ventricle was inverted in lead 1 at three of the four points stimulated.

3. These observations do not conform to the newer terminology now widely used in the interpretation of the electrocardiogram. They lead us to believe that the newer terminology can be safely applied only in the presence of a normal electrical axis or of left axis deviation.

Fifth Avenue and One-Hundredth Street.

11. Barker, MacLeod and Alexander,[9] Kountz, Prinzmetal and Pearson,[10] Marvin, H. M., and Oughterson, A. W.: The Form of Premature Beats Resulting from Direct Stimulation of Human Ventricles, Am. Heart J. **7**: 471 (April) 1932. Vander Veer, J. B.: Premature Beats Produced by Mechanical Stimulation of Exposed Human Heart, ibid. **8**: 807 (Aug.) 1933.

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The Tuberculin Reaction.—After a period of from three to seven weeks of tubercle formation enough tuberculoprotein has been liberated by the bacilli, through disintegration and other processes, to result in sensitization of the tissues to this substance. Up to this time there has been no way of determining the presence of tubercle bacilli and tubercle formation in the body. There are no symptoms or abnormal physical signs, the tuberculin test is negative and roentgenograms give no aid. Indeed, before sensitization appears, tubercle formation is sufficiently under way to control the tubercle bacilli at least temporarily and often for the lifetime of the patient. After sensitization is established a most valuable diagnostic aid is available in that tuberculin or pure tuberculoprotein applied to an abrasion of the skin or administered intracutaneously results in a reaction which reveals the presence of sensitization to tuberculoprotein. As far as is known there is nothing which is taken into the body which results in such sensitization except tubercle bacilli which have caused tubercle formation. Thus, a positive reaction to tuberculin is highly diagnostic of the first infection type of tuberculosis somewhere in the body.—Myers, J. A.; Diehl, H. S.; Boynton, Ruth E., and Trach, Benedict: Development of Tuberculosis in Adult Life, *Arch. Int. Med.* **59**:1 (Jan.) 1937.

HYPERTHYROIDISM MASKED BY SYMPTOMS OF ACUTE ABDOMINAL CATASTROPHE

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Cases of acute abdominal pain occurring during the course of thyrotoxicosis have been reported in the continental literature by Stern,[1] Kraus [2] and Desbouis.[3] The American literature contains scant reference to it. Horsley and Rosebro [4] reported a case of hyperthyroidism in which the chief complaints on admission to the hospital were indigestion, pain in the abdomen and bearing down in the pelvis. Operation revealed, however, a chronic adherent appendicitis and pathologic condition of the pelvis. Lahey [5] states that he has never seen a condition similar to the one dealt with in this presentation.

The practicing physician is well aware that abdominal pain suggestive of acute abdominal disease may merely express pain impulses from disease of the thoracic viscera. The "ruptured gastric ulcer and acute appendicitis" have not infrequently turned out to be a frank pneumonia, to the chagrin of the surgeon and the internist. The nausea, vomiting and pain in the right upper quadrant with the local spasm and tenderness of the rectus muscles so characteristic of an acute gallbladder attack have often mimicked coronary thrombosis or angina pectoris. The masquerading of such medical conditions as intra-abdominal disease is well known to the experienced physician. That metabolic disturbances will often mimic intra-abdominal lesions is not generally appreciated. Recently one of us [6] emphasized that the acidosis of diabetes mellitus requires differential consideration in abdominal catastrophes. In hyperthyroidism patients may likewise exhibit acute attacks of vomiting and abdominal pain which may be erroneously construed as arising from an acute intra-abdominal surgical lesion. Unless the examiner is familiar with this symptom complex and looks for other signs of hyperthyrodism, his attention will be riveted to an intra-abdominal organ or organs not responsible for the disease. The patient may thus be subjected to the grave risk of an unnecessary exploratory operation.

It is to be borne in mind that in patients with hyperthyrodism there is a rather high incidence of duodenal and gastric ulcers,[7] which may be the cause of acute abdominal symptoms in some patients.

This presentation, however, deals with instances in which the acute symptoms and signs referable to the abdomen are due entirely to the overactivity of the thyroid gland.[7a]

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REPORT OF CASES

CASE 1.—*Acute thyroid crisis masked by abdominal symptoms of acute appendicitis. Operation revealed a normal appendix.*

Miss M. B., a Negress, aged 19, admitted to the Philadelphia General Hospital, service of Dr. William E. Robertson, Oct. 18, 1929, complained of swelling of the neck and nervousness. The patient had been perfectly well until five years before admission. At that time her menstrual cycle began, and with this she first became aware of a small uniform enlargement at the base of the neck. It did not give rise to local discomfort, but nervousness developed at this time. Three years later, at the age of 17, she became pregnant. After delivery of a full term child she observed that the lump in her neck suddenly became larger; with the delivery of a second child one year later she noticed that the growth became nodular. At the time she experienced a heavy oppressive sensation over the neck, and with it she became quite nervous and irritable. Excessive perspiration and hypersensitiveness to heat developed. Three weeks prior to admission to the hospital the patient noted cardiac palpitation with oppression in her neck. There was no loss of weight, although there was ready fatigability in the last few months. The immediate past history was irrelevant.

Fig. 1.—Section under low power from the appendix, showing slight activity of lymphoid follicles and some round cell infiltration of the submucosa.

The patient was well nourished. She was not acutely ill but was emotionally unstable. The skin was moist. She had suffered several attacks of urticaria. There was widening of the palpebral fissures with slight exophthalmos, especially of the left eye. The tongue was tremulous and protruded in the midline. There was marked and total enlargement of the thyroid gland. Several nodules the size of marbles were palpable in both lateral lobes. In the isthmus there was a large nodule the size of a small egg. The heart was of normal size and the sounds were of good quality, the apical rate being 90. The blood pressure was 116 systolic, 90 diastolic. Examination of

the abdomen revealed no gross abnormalities. The pelvic organs showed a cervical laceration. The knee jerks were hyperactive.

The basal metabolic rate was plus 6 October 31 and minus 6 November 12. X-ray examination revealed no evidence of substernal goiter. There was a slight enlargement of the cardiac shadow to the left. Blood count showed erythrocytes 4,400,000, leukocytes 7,400, hemoglobin 14.2 Gm., polymorphonuclears 63 per cent, lymphocytes 37 per cent. The urine was normal. Blood sugar was 100 mg. and blood urea 11 mg. per hundred cubic centimeters. The patient was considered to have a colloid goiter and was given desiccated thyroid gland 2 grains (0.13 Gm.) three times a day on the apparent evidence that the thyroid enlargement was in a sense due to work hypertrophy. November 22, after the patient had taken thyroid extract for three weeks, the basal metabolic rate had risen to plus 20. The desiccated thyroid was reduced to 1 grain (0.06 Gm.) three times a day, during which time abdominal pain developed in

Fig. 2.—Section under low power showing acini that are widely dilated and filled with colloid. In some of these there is proliferation, forming papillary projections into the acini.

the right lower quadrant. This was constant and associated with headache and pain in the right side of the neck at the site of the "goiter nodules." Twelve hours later cramps developed in the region of the umbilicus and the patient vomited. Toward late afternoon the cramplike pain extended to both lower quadrants of the abdomen but was more marked on the right side. There was also some tenderness and rigidity over the lower part of the abdomen. Peristalsis was hyperactive. The basal metabolic reading December 10 (at the time of abdominal symptoms) was plus 57. The blood count on the day when the pain was most severe was leukocytes 20,200, polymorphonuclears 67 per cent, lymphocytes 33 per cent. A surgical consultation with Dr. Eliason at this time suggested acute appendicitis. The patient was treated conservatively because of her extreme nervousness and her high basal rate. Hypodermoclysis was given. Twenty-four hours later abdominal pain ceased. There was some tenderness and rigidity over the lower right quadrant of the abdomen. The blood count showed white blood cells 29,000, polymorphonuclears 75 per cent, lymphocytes 25 per cent. At this time a persistent diarrhea developed and the patient became quite restless. Dr. Eliason again saw her and suggested the probability of an appendiceal abscess and advised surgical intervention.

The appendix was removed and found on microscopic examination to be essentially normal, except for a slight activity of the lymphoid follicles and slight infiltration of the submucosa by small round cells. The patient became quite toxic and mentally disturbed. In view of the fact that there was neither any abdominal nor other inflammatory process found to account for her acute illness, and in view of a previous history of administration of thyroid extract, the last basal metabolic reading being plus 57, it was felt that the entire symptom complex was due to a thyrotoxicosis. In view of this she was placed on compound solution of iodine 15 minims (1 cc.) three times a day and saline hypodermoclysis. Seven days later the patient's general conditions had improved, the toxicity had decreased and the patient was returned to the medical ward in preparation for final thyroidectomy. Jan. 23, 1930, after three weeks on compound solution of iodine, the basal metabolic reading had decreased to minus 5. Six days later a subtotal thyroidectomy was done. After a stormy convalescence, during which the pulse rate went up to 180, she recovered completely and was discharged, January 28, from the surgical ward with a pulse rate of 88 and a basal metabolic rate of minus 11.

Histologic examination of the thyroid tissue reported on by Dr. W. P. Belk revealed the following: Sections gave rather an unusual picture. Certain areas showed widely dilated acini filled with colloid which had the normal acidophilic properties found in simple colloid goiter. In some of these there was proliferation, forming frondlike papillary projections into the acini. In other areas were numerous small closely packed acini, the lining of some of which was made up of rather tall columnar cells instead of the normal flat or cuboidal type, these areas being indicative of toxicity. Still other areas give the impression of having been stimulated to toxic proliferation with subsequent regression, an occurrence which sometimes results from administration of thyroid extract to patients with colloid adenoma.

The diagnosis was regressing toxic adenoma.

The patient was given thyroid extract with the hope of reducing the colloid tumor. The administration of desiccated thyroid resulted in acute thyrotoxicosis, the basal metabolic rate having risen to plus 57 from minus 6. During the thyrotoxicosis acute abdominal symptoms developed that resembled acute appendicitis. The appendix proved histologically to be normal. Subtotal thyroidectomy resulted in amelioration of the patient's thyrotoxic symptoms.

One of us knows of a patient who was admitted to the Mount Sinai Hospital of Philadelphia in the summer of 1933 with persistent vomiting, obstipation of nine days' duration and abdominal pain. The diagnosis of intestinal obstruction was made. A barium sulfate enema revealed marked spasticity of the rectum and sigmoid but no obstruction. After the acute emergency was over a more careful medical survey showed clinical signs of hyperthyroidism with a basal metabolic rate of plus 57.[8] A differential diagnosis cannot always be made. The patient's condition before operation suggests a widespread abdominal pathologic process.

Case 2.—*Thyrotoxicosis with abdominal symptoms simulating appendicitis. Administration of compound solution of iodine relieved symptoms of thyrotoxicosis and abdominal pains. With omission of iodine therapy the abdominal pain recurred.*

Miss H. S., aged 17, came to Temple University Hospital Oct. 17, 1931, with palpitation, pain in the loin and a gain in weight (23 pounds [10.4 Kg.] in the past few months). The patient stated that she had been well until nine months before, when she commenced to put on weight. Gradually she became drowsy and less active. She ate moderately but drank large quantities of water. Menstruation began at the age of 14 and

8. Scarf, M.: Personal communication to the author; paper to be published in the Journal of Laboratory and Clinical Medicine.

was regular until seven months before admission; since then she had missed four periods. There was frequency of urination during the day and nocturia two or three times a night. Increasing fatigue and nervousness were noted. She was conscious of "throbbing in the heart region." Palpitation was aggravated by exertion.

In the last few months pain developed in the right lower quadrant of the abdomen sufficiently severe to force her to seek admission to the hospital. There were no digestive disturbances.

The patient was obese with face flushed, skin moist and hands showing fine tremors. There was a suggestion of exophthalmos with some widening of the palpebral fissures. The neck showed rather moderate fulness, but not out of proportion to the rest of body configuration. The palms of both hands were moist. The heart showed left ventricular hypertrophy, the apex beat forcible and diffuse, tachycardia, the first sound loud, and no murmurs. The blood pressure was 150 systolic, 75 diastolic. There was muscular relaxation throughout the abdomen. No areas of plus tension were present and no masses were palpable. There was some tenderness on digital palpation in the lower right quadrant. There was uniform fat distribution with predominance over the hips and upper part of the thighs. The pelvic organs were normal. Roentgenograms of the chest showed slight prominence of the left border of the heart in the region of the left auricle. Otherwise the chest appeared normal. The sella turcica was normal on x-ray examination.

The laboratory examination revealed normal urine, a lymphocytosis of 40 per cent, Wassermann reaction negative, and sugar tolerance, fasting, 86 mg. per hundred cubic centimeters of blood, one-half hour 190 mg., one hour 150 mg., and two hours 144 mg.

Because of the tachycardia and nervousness and easy fatigability a basal rate was taken and found to be plus 43 and plus 47 on two different occasions.

The patient was placed on compound solution of iodine 0.6 cc. three times a day. At the end of twelve days the pain in the right lower quadrant of the abdomen ceased; nervousness was diminished. The basal rate had fallen to plus 2. The patient left the hospital and continued to report to the metabolic clinic for three weeks in a much improved state. Because of some "quarrels at home" she became nervous and irritable, with a return of all the former symptoms. The patient was advised to return to the hospital for thyroidectomy. She refused and failed to return to the clinic.

That the abdominal pain simulating an acute appendicitis is due to hyperthyroidism is evident from the facts that the pains were not associated with digestive disturbance, and administration of compound solution of iodine and the general improvement of the hyperthyroid state were followed by complete cessation of abdominal symptoms. With a return of hyperthyroid symptoms the pain in the right lower quadrant reappeared.

The cause of abdominal symptoms is not well understood; however, they may be due to disturbances of the vegetative nervous system. The existence of a disturbed vegetative nervous system in hyperthyroidism is well known and is evidenced by the dermographism and easy blush that the hyperthyroid patient shows.

It is quite possible that the abdominal pains are conditioned by the patient's constitutional anlage, associated with disturbed gastric hypersecretion and spastic bowel. The hyperthyroid state merely aggravates the abdominal signs. The existence of a complicating intra-abdominal surgical lesion is difficult to exclude without an exploratory laparotomy. However, the fact that the abdominal symptoms disappear with other signs of hyperthyroidism when iodine is given and reappear with symptoms of thyrotoxicosis when iodine is omitted would lead one to assume that they are related to hyperthyroidism.

CASE 3.—*Hyperthyroidism masked by pain in the left upper quadrant of the abdomen; complicated by constitutional syphilis; antisyphilitic treatment failed to relieve the abdominal pain; compound solution of iodine abolished abdominal symptoms.*

Mrs. J. B., aged 24, a Negress who had two living children and had had one miscarriage, admitted to the Philadelphia General Hospital in the service of Dr. H. D. Jump, Oct. 22, 1934, complained of violent pain in the left side of the abdomen near the umbilicus. The pain had been of two days' duration, was localized in the midabdomen with no area of transmission, was associated with belching and was made worse by the intake of food, especially fried food. There was no nausea, but she vomited once because she took large quantities of sodium bicarbonate to induce vomiting for the relief of pain. The bowels were obstinately constipated.

She stated that for the past twelve months she had been feeling generally out of sorts and unusually nervous and fidgety, having frequent attacks of palpitation and vague, diffuse complaints. The digestive upsets were usually worse during menstruation. One month before admission, during menstruation, pain developed in the epigastric region. There were copious eructations of gas. Two days prior to her admission to the hospital she was seized with acute pain in the upper left side of the abdomen. The appetite was good; she drank large quantities of water and had lost 20 pounds (9 Kg.) in the last year.

Examination revealed that the patient was very thin and nervous and weighed 76 pounds (34.5 Kg.). The skin was warm but dry. The eyes showed some widening of the palpebral fissures. The thyroid was definitely enlarged, the right lobe more so than the left; it was firm and smooth and was not adherent to the underlying structures. The heart was of normal size and overactive, with a soft systolic murmur over the apical and pulmonic areas. The lungs were clear throughout. The blood pressure was 170 systolic, 100 diastolic. The pulse ranged from 100 to 120. The abdomen was scaphoid in type; peristalsis was hyperactive. The liver was of normal size. There was tenderness on deep palpation in the left upper quadrant. The spleen was palpable. The deep tendon reflexes were exaggerated. There were no clinical signs of neurosyphilis. The pelvic organs were normal.

X-ray examination of the chest showed normal lung fields and cardiac silhouette except for an enlargement of the pulmonary conus. Both diaphragms were normally outlined. There was evidence of splenic enlargement. Urinalysis was normal. The blood count showed a secondary hypochromatic type of anemia, the red blood cells being 4,520,000 and the hemoglobin 60 per cent (Dare hemoglobinometer). The blood sugar was 100 mg. per hundred cubic centimeters, the blood urea nitrogen 12 mg. The Kahn and cholesterol antigen was 4 plus. The basal metabolic rate was plus 85 per cent. The electrocardiogram showed sinus tachycardia.

The patient was given compound solution of iodine 10 minims (0.65 cc.) three times a day, rest in bed, sedatives and high carbohydrate diet. This regimen was continued for two weeks. The abdominal symptoms disappeared and the spleen was no longer palpable. The pulse rate came down to 80, blood pressure to 135 systolic, 80 diastolic, and she gained about 4 pounds (1,814 Gm.). The basal metabolic rate decreased to plus 34 per cent.

It was suggested that the syphilitic infection might be the underlying factor for the hyperactivity of the thyroid gland. Compound solution of iodine was stopped and antisyphilitic treatment was administered, consisting of biweekly intramuscular injections of bismuth potassium tartrate for three weeks. The patient's pulse rate rose to 110; she became nervous and the basal metabolic rate became elevated to plus 45. The pain in the abdomen recurred, although not in as severe a degree as when the patient was first admitted to the hospital. The antisyphilitic treatment of weekly intravenous injections of neoarsphenamine 0.6 Gm. and a bismuth compound intramuscularly was continued for two weeks. The patient gained weight but the pulse rate remained accelerated and the basal metabolic rate remained high (plus 33). Potassium iodide was administered and one week later the basal metabolic rate decreased to plus 17. She left the hospital over the Christmas holidays in a much improved state.

One week after her discharge from the hospital she was readmitted with a loss of a few pounds, and the basal metabolic rate the following day was plus 39. The patient was placed on compound solution of iodine 10 minims three times a day, rest, sedatives and forced liquids. In the course of three weeks the basal metabolic rate again declined to plus 22, and although the pulse rate was elevated the patient was considered to be in a suitable condition for thyroidectomy. The latter was done Jan. 22, 1935. The day following the operation the pulse rate rose to 170, the temperature to 104 F., and stridor developed as a result of the edema of the glottis. In spite of tracheotomy she died twenty-four hours after operation. The microscopic examination of the thyroid by Dr. Custer was as follows: The majority of the acini were of normal size with slightly less than the usual concentration of colloid. The lining epithelium had reverted to the cuboidal type almost exclusively but still showed stratification in some acini; the epithelium was rather markedly degenerated in general as a result of iodine therapy. Lymphocytosis was not prominent. There was no evidence of neoplastic change.

The pathologic diagnosis was hyperplastic toxic goiter with iodine regression.

Autopsy by Dr. Morton McCutcheon, January 24, revealed the following gross anatomic diagnosis: slight edema of the larynx, heart normal except for enlargement of pulmonary conus. The lungs, spleen, liver and kidneys were normal. The right ovary was the seat of a unilocular cyst. There was chronic salpingitis of the tubes.

The histologic diagnosis was acute laryngitis, liver normal, ovarian cyst with hemorrhage, chronic salpingitis.

The cause of death was edema of the larynx following thyroidectomy.

The occurrence of syphilis in this patient, it would appear, was coincidental with the presence of hyperthyroidism rather than causative of thyroid overactivity. The antisyphilitic treatment failed to produce any great improvement, but delay of the appropriate treatment aggravated the patient's condition. The failure to respond to antisyphilitic treatment is an important factor against the assumption that the patient suffered from a syphilitic hyperthyroidism as described by Lévy-Franckel.[9] Then again the histologic examination of the thyroid gland showed no evidence of a syphilitic involvement.

The enlargement of the spleen as elicited clinically is not an unusual finding in hyperthyroidism. It is to be looked on as a part of the general picture of the status thymicolymphaticus described by Chvosteck Jr.[10] and Warthin.[11] At the postmortem examination the spleen weighed 140 Gm., which is moderately large for the spleen of a Negro.

It is interesting to note that the abdominal pain disappeared when the thyrotoxic symptoms decreased, and it reappeared with a recurrence of signs of hyperthyroidism. That the abdominal pain was not due to a tabetic crisis is evident from the fact that the patient had no neurologic signs of cerebrospinal involvement and that the pain was not of the character seen in tabes dorsalis.

SUMMARY

It should be appreciated that hyperthyroidism may play an important part in the production of signs and symptoms referable to the abdomen. They may be so severe as to suggest a surgical catastrophe. In two of three such cases the abdominal signs mimicked acute appendicitis. One of these patients was operated on and a normal appendix was found by the surgeon. The pains in the third patient were localized in the left upper quadrant of the abdomen. Postmortem examination showed no abdominal pathologic condition to account for the pains.

Differentiation is not always possible, since hyperthyroid patients may harbor lesions of the gastrointestinal tract. When appropriate therapy is applied, the abdominal symptoms disappear with other signs of hyperthyroidism. In the surgical cases the signs and symptoms usually progress.

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TREATMENT OF ORGANIC ARTERIAL OBSTRUCTION BY ALTERNATING SUCTION AND PRESSURE

A DEVICE TO RELIEVE INCIDENTAL ARTERIOSPASM

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Suction pressure therapy, in common with most forms of treatment of organic arterial obstruction, has as its aim the dilatation of the smaller arteries and arterioles, thus promoting a circulation collateral to the obstructed large arteries. There seems to be no reason to believe that such therapy can have any effect on spasm of these vessels. Nevertheless, such spasm is present in many cases of organic disease and adds materially to the obstruction caused by the organic lesion. Moreover, this spasm actually tends to keep contracted the very vessels that the treatment hopes to dilate and is therefore antagonistic to the treatment.

This spasm is prominent in the acute obstructions, especially embolism and thrombosis. Indeed, experience shows that when embolism occurs in a peripheral artery, if only the factor of spasm is removed, the collateral circulation may spontaneously become adequate to avert gangrene. In the case of thrombosis, one is dealing not with a separate disease entity but usually with a condition which occurs at some time or other in the course of almost every case of chronic arterial disease. With the access of this condition, arteriospasm supervenes on the organic obstruction and may continue for weeks or months.

In considering spasm in the chronic diseases, I shall but briefly mention arteriosclerosis, as this disease is almost free of arteriospasm, except at the infrequent times when thrombosis occurs. Thrombo-angiitis obliterans, on the other hand, is frequently complicated by a great deal of arteriospasm. This is probably due to the fact first that, unlike arteriosclerosis, it entails an inflammation of the vessels from its very start, and secondly that thrombosis is frequent and extensive.

There is also a tendency to contraction of the arterioles and capillaries of the treated limb as the result of physical changes in the suction pressure treatment proper. This is due to cooling of the skin first by the creation of a partial vacuum and secondly by the increase in evaporation of the perspiration, caused by air currents in the treatment cylinder, or "boot." The first item is not great. The temperature of the air in the cylinder as measured by the electric thermocouple falls from 0.5 to 0.7 C. during the suction phase and rises from 0.1 to 0.3 C. during the pressure phase. This fluctuation is greater when the air is at room

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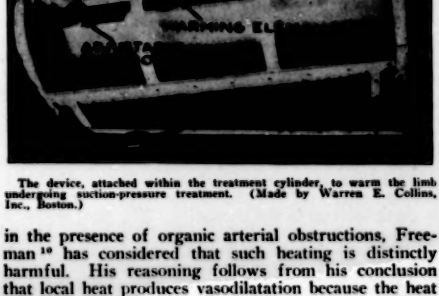
temperature and is minimal when the air is warmed. The effect of the air currents in increasing evaporation from the skin may be considerable. It should be minimized by a deflector over the entrance of the hose from the pumping unit, so as to prevent the full blast of the suction and pressure from striking the limb.

That the cooling of a limb will normally cause considerable contraction of the arterial system has been known for some time,[1] and Reid and Herrmann [2] have pointed out that cooling may produce an actual blanching in the presence of diseased arteries.[2]

There are various methods for the relief of vasospasm. Fever therapy, while an excellent method, is not suited for repeated daily use. The same is true of anesthesia (local, spinal or paravertebral). Vasodilating drugs are unsatisfactory: mecholin, the most powerful, is too expensive for routine use, theobromine is too uncertain and alcohol is too weak. One is left with the increase of environmental temperature as by the warming of the body by blankets and heaters [3] or by the heating of one or two of the limbs not being treated; e. g., heating the arms when the legs are treated [4] or, finally, by the heating of the diseased limb itself. For actual use during suction pressure treatment two methods have been used to give vasodilatation through heat. Landis and Gibbon [5] put to use the mechanism of their vasodilatation test and immersed the arms in warm water while the legs were in the apparatus. Later Landis and Hitzrot [6] used an electric heating pad around one arm as the source of heat. Reid and Herrmann [1] use preheated air at from 102 to 105 F. to heat the treated limb and in addition prescribe whisky.

A perusal of the measurements of the increase in blood flow caused by these various vasodilating procedures leads one to believe that the most powerful of all these agents is heat applied to the treated limb. Mosso's [7] graphs demonstrate that when both forearms are placed in separate plethysmographs, and only one is heated, both pulse waves increase in height but the increase is much more marked on the heated side.[8] Lewis,[9] by measurements of the digital pulse volume, and Hewlett and his associates,[8] by measurements of blood flow in the forearm and hand, have shown that the application of local heat will increase the blood flow from four to eight times. Freeman [10] has also measured blood flow by a plethysmographic method modified from the latter authors. His curves show the same rise of blood flow with increase in local heat, and it can be seen that as soon as the local heat reaches 30 C. (86 F.) or higher this increase greatly surpasses that from sympathectomy. Normally there continues to be an increase in blood flow with rise in temperature at least up to the point where the local heat reaches 50 C. (122 F.).[11]

There are reasons for believing that unless blood flow is additionally increased by other means, as by suction, the exposure of limbs with organic arterial obstruction to high levels of heat is harmful and may be dangerous. This can be demonstrated in an exaggerated degree by comparing the effect of large doses of diathermy when used on a live normal limb and the effect of the same amount of current on a piece of beef. In the live limb the heat is carried away as it is formed, while the heat remains in the piece of beef because there is no circulating medium to carry it away, and the interior of the beef becomes cooked. In considering lesser degrees of heating and its effect on the tissues



The device, attached within the treatment cylinder, to warm the limb undergoing suction-pressure treatment. (Made by Warren E. Collins, Inc., Boston.)

in the presence of organic arterial obstructions, Freeman [10] has considered that such heating is distinctly harmful. His reasoning follows from his conclusion that local heat produces vasodilatation because the heat increases the local metabolism of the tissues. When the arteries are normal, the increased need for nutriment is upheld by the augmented blood supply. When organic obstruction is present, however, the increased metabolism causes a quicker utilization of whatever blood can enter the limb. This being already inadequate, tissue starvation is increased. In this way local heat may cause considerable increase in the symptom of pain and may initiate or increase gangrene.

While it is certainly necessary to keep this in mind, the increase in blood flow during suction in the apparatus is ordinarily quite adequate to take care of the increase in metabolism caused by local heating. An important aspect of using heat during the time that a sufficient blood flow is enabled to enter the limb is that emphasized by Herrmann.[1] He points out that the local

1. Mosso [7] measured the height of the pulse of the hand and forearm by immersing the limb in a plethysmograph in which the temperature of the water could be changed. He used temperatures as low as 13.8 C. Hewlett, van Zwaluwenburg and Marshall [8] used a similar plethysmograph but took measurements of the amount of arterial inflow per unit of time. Using water at low temperatures, down to 12 C., they noted a fall in the circulation rate of from one-fourth to one-half the flow at ordinary room temperatures.

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9. Lewis, Thomas, and Kerr, W. J.: Experiments Relating to the Peripheral Mechanism Involved in the Spasmodic Arrest of the Circulation in the Fingers: A Variety of Raynaud's Disease, Heart **15**: 7 (Aug.) 1929

10. Freeman, N. E.: The Effect of Temperature on the Rate of Blood Flow in the Normal and in the Sympathectomized Hand, Am. J. Physiol. **112**: 384 (Oct.) 1935.

11. When increase in circulation is obtained by producing general artificial fever, Johnson and others have shown that a maximum increase in the height of the pulse wave is reached when the body temperature lies between 103 and 104 F. and seemingly will go no higher when the fever temperature is raised beyond this point (Johnson, C. A.; Osborne, Stafford, and Scupham, George: Studies of Peripheral Vascular Phenomena: IV. The Effect of Artificial Fever on the Pulse Volume Changes of the Finger, Am. J. M. Sc. **190**: 485 [Oct.] 1935).

increase in metabolism caused by local heat is of distinct benefit in increasing the processes of slough and repair. He reports favorable results in the healing of ulceration and in the demarcating of gangrene by using the preheated air during the treatment.

With these considerations in mind, I have been using a device for warming the limb during treatment in the suction pressure apparatus shown in the accompanying illustration. The device consists of two 75 watt tubular warmers, each suspended in the center of a wire guard. Thus protected, each warmer is bolted on either side of the interior of the treatment chamber. The current to the warmers is regulated by a bimetallic thermostat of conventional design, to give a controlled temperature range from 90 to 110 F. (32.2 to 43.3 C.). For use with direct current a condenser of 1 microfarad is further connected to the thermostat to cut down arcing at the contact points.

The use of this controlled local warmth of the treated limb seems to bear out the theoretical considerations, since with it the suction pressure treatment seems to be more effective.[12] This is true even in cases of arteriosclerosis in which no appreciable spasm is present. Here one must consider, I believe, that above the level of maximum ischemia there are still dilatable vessels; that is, in the region of the knee and thigh.[13] It is in order that these vessels may be influenced by the suction and the warmth that one should insist on inserting the limb far enough into the cylinder so that the cuff lies well up on the thigh.

Freeman has pointed out that pain is one of the best indications that heat around a limb is excessive; that is, that the metabolic increase caused by the heat is in excess of the increase in blood flow. Thus the temperature chosen for any patient is that which the patient finds most comfortable and is never above 110 F. Such relatively high temperatures are comfortably endured because the suction is able to increase the blood flow beyond the increased demands of the metabolism. There are some patients whose smaller vessels are so badly obstructed that the suction results only in a very slight increase in the circulation. The same is true of some sudden obstructions, as by thrombosis. In such instances it is safest to keep to very low temperatures, about 90 F., and, if the temperature cannot be increased without causing pain, to seek further vasodilatation by means of drugs or nerve block.

SUMMARY

In cases of both acute and chronic organic arterial obstruction there is apt to be an associated spasm of the collateral vessels. This spasm counteracts the effect of the suction-pressure therapy and is not relieved by the treatment.

A device is here described to furnish warmth to the affected extremity while it is treated by suction-pressure. Such locally applied warmth is capable of maximum vasodilatation and increases the effectiveness of the suction. Moreover, the local increase in metabolism caused by the raised temperature assists in the processes of healing.

330 Dartmouth Street.

12. Theis and Freeland (J. A. M. A. 107:1097 [Oct. 31] 1936) have concluded that warming the upper limbs during the suction pressure treatment gives better results than when the suction pressure treatment is used without such warming. They have additionally concluded that this combination is better than heating the lower limbs directly during the treatment. The latter point seems inconclusive, so far as their published work goes; and it is at variance with the experimental work quoted by me.

13. Edwards, E. A.: The Arteriographic Comparison of Thrombo-Angiitis Obliterans and Arteriosclerosis, New England J. Med. 213:616 (Sept. 26) 1935.

THE CAUSE OF JOINT PAIN

OCCURRING DURING ACTIVE IMMUNIZATION WITH SCARLET FEVER STREPTOCOCCUS TOXIN

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It has been observed that, during the course of immunization of young adults against scarlet fever, approximately 3 per cent complain of joint pains following one or more doses. These pains are sometimes associated with swelling of the joints involved. They usually develop within twelve hours following a dose of scarlet fever streptococcus toxin and last from a few hours to several days, when they disappear, leaving no residual effect. The question arises Do these pains occur as a direct result of the action of the streptococcus toxin on the joint tissue or do they occur because the involved joint tissue has at some time become sensitized to the protein contained in the toxin solution? In the latter case has the protein concerned resulted from the growth of the streptococcus or is it protein present in the broth used for production of the toxin? The following experiments were undertaken in an attempt to clarify these questions:

FIRST EXPERIMENT

To five young adults who complained of joint pains during the course of immunization against scarlet fever, sterile veal broth culture medium was given. This broth was from the identical lot that was employed in the production of the toxin being used in the immunization. One week after the administration of the dose of toxin that produced the joint pains, a dilution of the broth was given containing the same concentration of medium that was present in the next larger dose of toxin. The following week the corresponding dose of immunizing toxin was given. The reaction was noted after each dose and the procedure was repeated each time the patient reported joint pains. No information was given the patient concerning the content of the doses. A history was obtained pertaining to the previous occurrence during their lives of joint pains, "arthritis," "rheumatism," growing pains when a child, chorea and cardiac symptoms as well as frequency and severity of sore throat and tonsillitis.

Table 1.—*Joint Pains Occurring on Two or More Occasions Following Administration of Scarlet Fever Toxin; No Joint Pains Following Administration of Veal Broth Medium*

Previous History	Patients
Streptococcic sore throat 2-3 weeks previous to dose of toxin causing joint pains	2
Scarlet fever as a child with no arthritis	1
Frequent sinusitis before removal of tonsils; etiology unknown	1
Growing pains and occasional sore throat as a child	1

Table 1 indicates five persons who had joint pains at least twice following the administration of scarlet fever streptococcus toxin with no joint pain on the subsequent administration of veal broth medium diluted to contain the concentration of broth protein to be found in the next larger dose of toxin. In one of these persons the arthralgia started with the second dose and continued through the fifth dose of toxin, alternating regularly with no joint pain when the subsequent dose of veal broth medium was given.

From the Scarlet Fever Committee and the John McCormick Institute for Infectious Diseases.

Two of these five persons had streptococcic sore throat while the doses were being given, in both instances from two to three weeks previous to the dose causing the joint pains. One of the patients had scarlet fever as a child. One had frequent sinusitis of unknown etiology before her tonsils were removed, and one gave a history of growing pains with occasional sinusitis as a child.

These results indicated that the joint pains were not produced by protein contained in the veal broth used in preparation of the toxin. The following experiment was undertaken to learn whether the arthralgia was caused by substances other than the soluble toxin produced during growth of scarlet fever streptococci in the broth:

SECOND EXPERIMENT

Fifty-eight young adults who had positive Dick tests and who were being immunized against scarlet fever reported the occurrence of joint pains. One week after the administration of the dose that produced the joint pains the next larger dose was given, but this toxin was heated before injection by immersion in a bath of boiling water during one hour. This length of time has been shown to be sufficient to inactivate all soluble toxin in the solution. The following week the same dose was given. However, on this occasion the material was unheated and therefore contained active toxin.

The reaction was noted after each dose and the foregoing procedure was repeated each time the patient reported joint pains. To eliminate so far as possible the subjective element, the patients were given no information concerning the boiled toxin injections. They assumed that all doses contained unmodified toxin. A

TABLE 2.—*Joint Pains Occurring on Two or More Occasions Following Administration of Unheated Toxin; No Joint Pain Following Administration of Heated Toxin*

Previous History	Patients
Rheumatic fever with joint involvement	1
Joint pains following scarlet fever	1
Joint pains following recurrent tonsillitis of unknown etiology	1
Definite growing pains when children	4
Definite growing pains associated with frequent tonsillitis	1
Frequent sore throats before removal of tonsils; evidence of cardiac involvement	3
Uncomplicated sore throats and tonsillitis	6
No history related to rheumatic syndrome	2
Total	19

TABLE 3.—*Joint Pains Occurring on One Occasion Following Administration of Unheated Toxin; No Joint Pain Following Administration of Heated Toxin*

Previous History	Patients
Joint pains following scarlet fever	2
Joint pains following accidental injury to knee	1
Joint pains associated with growing pains, sore throat or cardiac difficulty	3
Definite growing pains occurring either alone or associated with sore throats, tonsillitis or cardiac difficulty	6
Sore throats and tonsillitis	6
Sore throats and tonsillitis associated with cardiac difficulty	1
No history related to rheumatic syndrome	4
Total	23

history similar to that in the first experiment was obtained. The patients in this experiment fell into four groups:

Group 1. Those patients in whom joint pains occurred on injection of unmodified toxin and were absent after the injection of heated toxin, with recurrence of pains on one or more subsequent injections of unheated toxin.

Table 2 indicates the nineteen persons in this group. Their joint pains, when they occurred, were severe and definite, coming on within twelve hours after unheated toxin was administered and lasting for from one to five

TABLE 4.—*Joint Pains on One or More Occasions Following Administration of Unheated Toxin; Joint Pains Present but Less Severe Following Administration of Heated Toxin*

Previous History	Patients
Joint pains following pneumonia and later following tonsillitis	1
Joint pains associated with growing pains, tonsillitis and sinusitis	1
Joint pains associated with severe growing pains, tonsillitis, mastoiditis and cardiac murmur	1
Joint pains following scarlet fever	1
Growing pains associated with chorea	1
Growing pains associated with sore throat	1
Frequent sore throats before removal of tonsils	1
No history related to rheumatic syndrome	4
Total	11

TABLE 5.—*Joint Pains Following Administration of Heated Toxin as Severe as Following Administration of Unheated Toxin*

Previous History	Patients
Joint pains associated with influenza	2
Joint pains with streptococcic sore throat	1
Joint pains with streptococcic sore throat while receiving doses	1
Severe sore throats as child; generalized protein reaction with doses	1
Total	5

days. At the end of a seven day period joint pains had completely disappeared and did not recur in any degree whatever following the administration of heated toxin. After another week had elapsed a dose of unheated toxin again caused marked joint symptoms similar to those observed at the first occurrence among these patients. Three of the nineteen patients gave a history of previous definite joint involvement; in one instance rheumatic fever had occurred four years previously; in one instance "arthritis" had been associated with scarlet fever twelve years previously, and in another instance "arthritis" had been associated with recurrent tonsillitis of unknown etiology. Three of the nineteen patients reported frequent sore throats before removal of the tonsils and gave evidence of cardiac involvement, two of the three presenting systolic murmurs. Five of the nineteen patients gave a history of definite growing pains as children, in one instance associated with sore throat and tonsillitis, while six of the nineteen had apparently had uncomplicated sore throat or tonsillitis, three frequently and three occasionally. Two patients gave no history of any of the foregoing symptoms.

Group 2. Those patients in whom joint pains occurred on injection of unmodified toxin and who had no pain after injection of heated toxin and no recurrence of pain on subsequent injection of unmodified toxin.

Table 3 indicates the twenty-three persons in this group. They had definite joint pains once during the course of immunization followed by the absence of such pain after the administration of heated toxin, but they had no joint pain after the next dose of unheated toxin. Six of these twenty-three persons gave a history of previous joint involvement, two of them following scarlet fever in one instance twenty-five years previously and the other fifteen years previously and more recently following sinusitis, one following accidental injury to a knee, two associated with growing pains or sore throat

in childhood and one with growing pains and possible symptoms of mild cardiac involvement. Growing pains were reported in six other patients in the group of twenty-three, occurring either alone or in combination with frequent sore throat, tonsillitis or cardiac difficulty. Seven more patients of the twenty-three reported sore throat or tonsillitis, in one instance associated with cardiac symptoms. Four patients in this group gave no history of the foregoing symptoms.

Group 3. Those patients who complained of joint pains after injection of unmodified toxin and who had less pain on injection of heated toxin.

Table 4 indicates the eleven persons in this group. They exhibited joint pain following a dose of unheated toxin, but joint pain was present also in a lesser degree on administration of heated toxin. Four of these patients had had previous joint pain, one twelve years previously following pneumonia and more recently following tonsillitis, one associated with growing pains, tonsillitis and sinusitis as a child, one associated with severe growing pains, tonsillitis, mastoiditis and a cardiac murmur, and one following scarlet fever at 6 years. Two of the eleven reported growing pains, one associated with chorea as a child, and one with frequent sore throat as a child. One patient gave a history of frequent sore throat before the removal of tonsils. Four in the group of eleven gave no history of the foregoing symptoms.

Group 4. Those patients who had irregular occurrence of joint pains after injection of heated as well as of unheated toxin.

Table 5 indicates these five persons. Their joint pains were irregular, occurring at times with greater severity following the administration of heated than of unheated toxin. Three of these patients had had previous joint pains, two associated with "influenza" and one with a streptococcic sore throat three months previously. One of these five patients had a streptococcic sore throat during the time she was receiving doses, and the remaining patient gave a history of frequent attacks of sore throat as a child and had had a severe generalized protein reaction with some of the doses. Heated toxin was not continued in this instance because of the severe discomfort of the patient.

SUMMARY

1. Joint pain was caused in sixty-three young adults by the subcutaneous injection of sterile, filtered streptococcus toxin in broth solution.

2. Of these sixty-three patients fifty-three, or 84.1 per cent, gave a history of previous occurrence of joint pain or of symptoms suggestive of rheumatic infection or previous streptococcic infection.

3. In forty-seven, or 74.6 per cent, the joint pain produced by the injection was due to the toxin alone.

4. In eleven, or 17.4 per cent, toxin was the chief factor in the causation of joint pain.

5. In five, or 7.9 per cent, the joint pains were not caused by the toxin but were attributable to protein contained in the broth solution or to coincident active foci of infection in these patients.

COMMENT

Subcutaneous injection of sterile filtered scarlet fever streptococcus toxin into the upper arm may produce a painful reaction in the joints of persons who give a previous history of joint pain or of symptoms suggestive of rheumatic infection or previous streptococcic infection. Infrequently painful joint reactions occur when such a previous history cannot be elicited.

The fact that in most instances pain caused by sterile filtered streptococcus toxin in broth solution could not be reproduced when the toxin in the solution was destroyed by heating or when diluted broth was given indicates that the pain was most frequently due to toxic action and not to sensitization to protein resulting from the growth of the streptococcus or to protein present in the broth used in the production of the toxin.

CONCLUSION

In persons who have previously suffered an infection involving the joints, acute temporary recurrence of the joint pains may be elicited by absorption of sterile streptococcus toxin produced in many instances by a type of organism probably not responsible for the primary infection.

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EFFICACY OF VARIOUS MEDICAMENTS IN THE TREATMENT OF VINCENT'S STOMATITIS

REPORT OF SEVEN HUNDRED AND NINETY-FOUR CASES

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Vincent's stomatitis is becoming recognized as a distinct clinical entity. This disease may appear as the end result of many debilitating diseases. More often it appears in healthy individuals, but its main requirement to appear in epidemic form is poor mouth hygiene and crowded quarters.

Confronted by an epidemic of Vincent's stomatitis in an institution in which end results could be observed, we decided to give nearly every logical treatment a fair trial and observe the results.

It had been proved that Vincent's organisms are obligate anaerobes and cannot exist in the presence of oxygen; consequently we would resort to oxidizing agents for assistance when our cases did not do well. The pathogenicity of these organisms is still questioned, but destruction of these organisms eradicated the pathologic condition.

Leeuwenhoek [1] in 1683 told the Royal Society about a new kind of creature that he found in the mouth of a virtuous but dirty individual. This mouth was host to an organism that slid among the others, bending its body in graceful curves. Two hundred years later Pasteur [2] discovered that each infectious disease is produced by a specific organism. In 1883 Willoughby D. Miller, an American dentist, described fusiform bacilli and spirochetes. He stated that "pathogenetic properties of these organisms had already been described by Verneuil and Clado." Plaut [3] in 1894 reported cases of nondiphtheric membranous angina in which he found the organisms described by Miller. He called these "Miller's organisms." He attributed them to be the causative factors in the angina because the organisms were present in such great numbers. The organisms are found beneath the free margin of the gums in almost every mouth.

1. Leeuwenhoek, Antonius, cited by de Kruif, Paul: Microbe Hunters, New York, Harcourt, Brace & Co., Inc., 1926, p. 89.
2. Vallery-Radot, Pasteur: The Life of Pasteur, New York, Doubleday, Page & Co., 1927.
3. Plaut, H. C.: Studien zur bacteriellen Diagnose der Diphtherie und den Anginen, Deutsche med. Wchnchr. 20:919-920 (April) 1894.

In 1898-1899 Vincent [4] described two diseases of the mucous membrane of the mouth and pharynx which he ascribed to a spirochete. The first was mild stomatitis, with superficial ulcerations, with a subfebrile course lasting two weeks. The second was more severe. In the mild case he found only the fusiform bacillus and in the more severe he found the bacillus associated with the spirillum. He was unable to cultivate the organisms and satisfactorily test their pathogenicity, being unable to produce the disease in the mouth or vagina of animals. Weaver and Tunnicliff [5] in 1905 described the presence of the fusiform bacillus and spirillum in ulcerative stomatitis and succeeded in cultivating the bacillus anaerobically.

Smith,[6] in an attempt to prove the pathogenicity of these organisms, was unable to produce abscesses in the groins of guinea-pigs without first traumatizing the tissue. In 20 per cent of some 100 animals Smith produced lung abscesses by intratracheal injections of bloody scrapings from pyorrhea under ether anesthesia. He concluded that lung abscess was commonly caused by a mixture of anaerobic organisms, the fusiform bacillus, spirochetes, vibrios and a hemolytic streptococcus. Smith made spirochete cultures of these organisms and injected guinea-pigs with pure culture singly and combined. Only a mixture of Treponema microdentium, a small fusiform bacillus, a vibrio and hemolytic streptococcus would produce the typical foul smelling pus.

Lichtenberg, Werner and Lueck,[7] at the suggestion of Dr. Joseph Brennemann, have made some of the most significant observations with regard to the clinical course of treatment and the failure of many works to establish the pathogenicity of these organisms. They had sixteen ulcerative cases presenting positive Vincent's organisms which cleared up without treatment. It has been our observation, however, that the manifestations of the disease became more acute the longer they were allowed to progress without treatment; finally the patient would refuse food and drink, owing to the pain caused by the ordinary processes of mastication and swallowing.

Vincent's stomatitis is a mildly contagious disease which commonly affects the gums and in the more severe cases the lips, cheeks and lateral and dorsal aspects of the tongue. This may be followed or preceded by Vincent's angina and involvement of the entire respiratory and gastro-intestinal tract.

The disease is as Bloodgood [8] so aptly described it:

> The mucous membrane lining the three communicating chambers—oral cavity, fauces and pharynx—may be diffusely involved or there may be only a single spot a few millimeters in diameter. The single spot is the unit, and the diffuse lesion is only a multiplicity of single spots. The single spot is at first a red area of irregular outline, never sharply defined, of such a peculiar redness that it may be called the erysipelas of the mouth. The center of the red area may be covered with a whitish or grayish patch which is really due to the superficial destruction or necrosis of the red mucous membrane. Beyond this superficial slough there is still a red zone. It is not unlike a minute gumma in which a central zone of necrosis, surrounded by the red zone of collateral anastomoses of increased vascularity, is recognized. In this stage, because of the little gray or whitish slough, the condition may be confused with leukoplakia, but the latter is never surrounded by an inflamed and reddened mucous membrane. Leukoplakia and Vincent's angina may appear together. In the next stage the slough comes away and leaves an ulcer. Thus there may be, in this infection called Vincent's angina, single or multiple red areas, single or multiple areas covered with a superficial slough, or single or multiple ulcers. Now and then one or more of these ulcers may be quite large, although rarely more than 18 mm. in diameter; usually the single unit areas are only a few millimeters in diameter. The ulcer never looks like a mucous patch, and it never has the ragged excavated edge of the tuberculous ulcer or the induration of the cancerous ulcer. In the very extensive cases there may be a fibrous exudate not unlike diphtheritic inflammation.

The disease as we observed it clinically was characterized by pain and swelling of the gums, hyperemia, and fetid odor of breath. The gums were often covered with a gray pseudomembrane, more common in the interproximal spaces than elsewhere. The removal of this membrane produced profuse bleeding. The interproximal papillae are destroyed by ulceration and sloughing, producing a characteristic punched out appearance which persists even after resolution. There is a septic type of temperature varying from 97 to 103 F. at no fixed time or period. Chills and fever are sometimes present and in more severe cases there is a marked diarrhea accompanied with a loss of weight due to dehydration. The saliva is thick, ropy and excessive. The patient is listless and irritable and refuses to eat in most cases.

Vincent's stomatitis must be differentiated from syphilis, diphtheria and malignant growths, less frequently from scurvy, pernicious anemia, aplastic anemia, acute leukemia, bismuth or mercurial stomatitis, and mouth manifestations of erythema multiforme and pellagra. This differentiation must be accomplished by examination of the blood, and biopsy as well as by negative or positive smears.

In our series of 704 institutional cases (349 females and 355 males) and ninety private cases there were many complications with six deaths. We found it to attack the larynx, the tracheal bronchial tree, as Jackson [9] has observed, producing bronchopneumonia and lung abscesses. It also produced acute suppurative otitis media and two fatal cases of noma. In private practice we were called to see three patients who were dying following the extraction of teeth in the presence of a mild Vincent infection. These patients had extensive ulcerations involving the rectum and genitals, from which pure cultures of Vincent's organisms were obtained. Their blood streams did not show the Vincent organisms. These patients seemed to die of severe toxemia and dehydration due to excessive diarrhea.

Our original intention was to record Vincent's infection in all its phases. However, as the data accumulated we were faced with a limited number of each type of complication. For instance, we had three patients with lung abscess presenting pure culture of Vincent's organisms who recovered with the aid of bed rest and bronchoscopic and postural treatments. We also had many patients with acute otitis media who readily recovered with douchings of solution of hydrogen peroxide. In one case suppurative mastoiditis developed; the patient was operated on and recovered with the usual surgical treatment plus douchings of solution of hydrogen peroxide in the wound. In other cases angina developed, usually accompanied with a stomatitis. The patients with angina would recover promptly

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5. Weaver, G. H., and Tunnicliff, Ruth: The Occurrence of Fusiform Bacilli and Spirilla in Connection with Morbid Processes, J. Infect. Dis. **2**: 446-459 (June) 1905.
6. Smith, D. T.: Fusospirochetal Disease of the Lungs Produced with Cultures from Vincents Angina, J. Infect. Dis. **46**: 303 (April) 1930.
7. Lichtenberg, H. H., Werner, Marie, and Lueck, Esther Volckmann: The Pathogenicity of the Fusiform Bacillus and Spirillum of Plaut-Vincent, J. A. M. A. **100**: 707-711 (March 11) 1933.
8. Bloodgood, J. C.: Oral Lesions Due to Vincent's Angina, J. A. M. A. **88**: 1142-1145 (April 9) 1927.
9. Jackson, Chevalier: Ulcerative Bronchitis Due to Vincent's Infection, J. A. M. A. **83**: 1845 (Dec. 6) 1924.

when solution of hydrogen peroxide was used as a gargle. Therefore we have limited the scope of this paper to Vincent's stomatitis, with which we have had a great deal of experience. We feel that this disease is very common and, if recognized and properly and promptly treated, the results will be excellent and the patients will not be endangered either by the complications or by overmedication.

In the last two and one-half years, 3,800 patients have been examined at least ten times. We never found Vincent's ulcer in a mouth from which the teeth have all been extracted. This was also observed by Bloodgood.[9] Our edentulous patients numbered 325. We have never found Vincent's infection in the mouth of a tobacco chewer. This agrees with Moriarty.[10] In our series ninety tobacco chewers have given negative results at each examination. Smokers seem to be more susceptible to infection and reinfection. The constant use of cigarets sets up a gingivitis in the lower anterior region which makes the individual very susceptible to Vincent's infection.

Of 450 slides taken of patients with mild to severe gingivitis, 212 showed numerous Vincent's organisms without ulceration. This occurred some fourteen months ago. These patients have been carefully watched and of this number Vincent's stomatitis developed in only twelve. The others are clear at this date. Therefore we conclude that Vincent's organisms can be found in many normal mouths and are not indicative of the disease. This agrees with Tenny, Lichtenberg, Werner and Lueck [7] and others.

Irritation and gingivitis from poor fitting dentures, poor alinement of the teeth and broken down teeth, according to Harrell,[11] are anaerobic incubators and provide excellent spots for the infection to start. In our observations we also find that pyorrhea pockets, overhanging fillings and gingival tissue flaps also are contributing factors. We had six patients who were under heavy arsenic treatment for syphilis and developed Vincent's infection. Sutton [12] and others have observed the same phenomenon.

Poor nutrition may be a factor, according to Fantus,[13] but in our patients we could not attribute it to such a lack, since our epidemic was not from certain wards but from the whole institution. From the wards caring for patients of the lowest mentality and where the younger patients are confined, among whom the personal hygiene is at the lowest ebb, we found the largest number of cases. While the epidemic was at its height we had a corresponding increase in our private practice.

Eight patients were examined for blood calcium during acute infections, and eight others who had had the infection and who had been dismissed as cured were also examined. The blood calcium content in all cases, both acute and cured, was within normal limits. At the same time a complete blood count was taken in the active cases and all were within normal limits, a few cases showing a slight polymorphonuclear leukocytosis.

Vincent's infection in cases of even the most severe type does not establish any immunity, as many patients return with new infection.

The following is a summary of our results with the recognized methods of treatment. In spite of the fact that we had six syphilitic patients under active antisyphilitic treatment with arsphenamine in whom Vincent's stomatitis developed, we decided to try twenty-three patients on neoarsphenamine, 3 Gm. in three doses, and allow these patients to use their ordinary mouth hygiene.

Case 1.—One of the patients with Vincent's stomatitis was given intravenous injections of neoarsphenamine; the infection healed rapidly and negative smears were obtained from his mouth. He was dismissed as cured. In about fourteen days he returned with a cellulitis on the right side of the face and throat, the free margin of gums and cheeks showing a characteristic Vincent's ulcer from which positive slides were obtained. He was then treated with hydrogen peroxide 10 per cent, neoarsphenamine and glycerin, but the ulcer persisted and enlarged. A dull red spot appeared on the external surface of the cheek in thirty-six hours and changed to black. This rapidly started to slough away and with it sequestrums of the maxillary bone, deciduous teeth and unerupted permanent teeth. This extensive destruction of tissue was not accompanied by hemorrhage. There was a characteristic foul odor from the patient, which could hardly be tolerated even in the presence of disinfectants. The patient did not complain but persisted in picking at the ulcerated part. The diagnosis was noma. On the sixth day following the onset of the infection the patient died.

While on the subject of noma we will give brief outlines of two other cases that came under our observation:

Case 2.—A white girl, aged 12 years, who had been under treatment for Vincent's infection, had been dismissed as cured after the mouth had cleared up and all symptoms had disappeared. Two months later she returned to the office for treatment. She had a small ulcer the size of a dime (18 mm.) in the buccal mucous fold on the upper right side of the mouth with some ulceration of the gums, an oral temperature of 101 F., marked fetid odor of the breath and diarrhea. She was given one injection of neoarsphenamine and treated with 10 per cent neoarsphenamine and glycerin followed by spraying with solution of hydrogen peroxide, U. S. P., every two hours. In spite of all treatment, however, the patient grew rapidly worse. The ulcer progressed rapidly, eating through the soft tissue into the bone, causing the loss of several teeth. Finally it penetrated into the antrum. The sixth day after the institution of the treatment, death occurred. The entire right cheek including the eye was sloughing away when death occurred. Positive slides were removed from the ulcer.

Case 3.—A Negro boy, aged 10 years, presented a clinical picture identical with that just reported except that the ulcerative spot was on the lower left side. Considerable cellulitis was present. Under anesthesia we did a radical extirpation of the ulcerated area. We then cauterized the area with 50 per cent trichloroacetic acid. A two hour treatment with solution of hydrogen peroxide was instituted and in two weeks complete resolution was obtained. Up to the present time the patient has never had a recurrence. He has been examined ten times since the treatment, so we will suppose that he is completely cured.

Of the other cases under neoarsphenamine treatment, the condition in four cleared up and remained well. Several others showed a marked change for the better in from two to four days. However, this treatment did not go to complete resolution but responded to local treatment by solution of hydrogen peroxide. Any medication that is as widely acclaimed as the arsenics should be a specific for this condition. We feel that it has little therapeutic value intravenously. This agrees with a statement in The Journal: [14] "Intravenous injection of neoarsphenamine has never been justified in the treatment of Vincent's infection, either theoretically or clinically."

In the treatment of a large number of cases with a limited staff it would be impossible to use sodium per-

10. Moriarty, L. J.: Clin. Med. & Surg. **36**:108 (Feb.) 1929.
11. Harrell, Voss: The Present Status of Plaut-Vincent's Infection, Arch. Otol. **14**:1-8 (July) 1931.
12. Sutton, J. C.: Vincent's Angina Occurring in a Patient Under Treatment for Syphilis, J. A. M. A. **82**:1919 (Dec. 13) 1924.
13. Fantus, Bernard: The Therapeutics of the Cook County Hospital, J. A. M. A. **104**:741-742 (July) 1934.
14. Vincent's Infection of Mouth, Queries and Minor Notes, J. A. M. A. **102**:639-640 (Feb. 24) 1934.

borate as a paste. It would be impracticable, owing to the amount of time necessary to pack each patient's interproximal spaces satisfactorily. In a resistive or lower grade patient it would be almost impossible to apply this medication properly because of lack of cooperation. We require a remedy that can be used on the most uncooperative patient with the least amount of difficulty. This automatically rules out the application of sodium perborate paste.

Neoarsphenamine and glycerin 10 per cent was used in sixty-five cases; in half of this number the condition cleared up promptly and the patient remained well. The remaining portion were treated with the arsenic plus solution of hydrogen peroxide, with good results, and all were cured.

Fifteen per cent chromic acid without any oxidizing agent was tried in 281 cases. This had to be abandoned before any cures were effected because after two treatments the procedure proved to be too drastic, causing vomiting, nausea and severe sloughing of the gum tissue. However, when we combined it with solution of hydrogen peroxide we had many recoveries. The disadvantage of this procedure was that the teeth became badly stained and the nausea and sloughing persisted even when the solution of hydrogen peroxide was used in conjunction with the chromic acid.

In private practice ultraviolet rays have been applied in about ten cases, which all cleared up promptly, but solution of hydrogen peroxide, U. S. P., was used every two hours, day and night, in conjunction with the ultraviolet rays. None of these patients had recurrences. The lamp used was water cooled and the light was applied with a quartz applicator. This agrees with the observations of Rasmussen.[15] However, the same reasons we advanced as making the use of sodium perborate impracticable in institutional work apply to the use of the water-cooled ultraviolet ray lamp.

On some 140 cases we tried aconite, iodine and chloroform. After a thorough trial this was discarded because of the extremely bad taste, though not until we had tried it out thoroughly. In the cures we had under this treatment solution of hydrogen peroxide was used in conjunction with the aconite, iodine and chloroform.

Solution of potassium arsenite was not used owing to the lack of cooperation of patients and the poisonous properties of the treatment. It had been recommended by Smith in his book "Fusospirochetal Diseases" but was not practical for our purposes.

We tried aniline dyes in more than 110 cases, namely, gentian violet in fifty-five and methylene blue in fifty-five, with hardly any success. Only a few cases cleared up and in all cases that did clear up we had used solution of hydrogen peroxide as an adjunct to the treatment. These aniline dyes penetrate the cracks in the enamel and discolor the teeth. This also holds true in the case of porcelain and synthetic fillings. This is a definite contraindication of its use.

We tried tincture of benzoin in thirty-five cases. This treatment did no good whatever and was discarded.

CONCLUSIONS

1. The severity of the case is determined by the resistance of the individual and the virulence of the infecting organisms. This is aptly illustrated in the different types of patients we handle, the lower grades and younger defective children always being more susceptible.

2. In all cases and under all types of treatment, in order to get a proper lasting cure, we feel that thorough prophylaxis and scaling of the teeth, accompanied by the removal of all mechanical irritations, is as necessary a requisite in the treatment of this disease as the medicinal side of the treatment.

3. Abstinence from cigaret smoking and alcohol is to be recommended during the infection.

4. The slightest surgical procedure, even in the presence of the mildest types of Vincent's infection, is to be avoided.

5. In most cases the disease becomes more acute the longer it is allowed to progress without treatment.

6. Solution of hydrogen peroxide, U. S. P., is the prime factor in curing Vincent's infection. However, some of the cases may be assisted by the use of other medicaments, but one cannot be sure of a cure in all cases unless solution of hydrogen peroxide is used in conjunction with the other medicaments. We also feel that it cannot be used to excess. In referring to the use of solution of hydrogen peroxide in this paper it was always used at least four times a day, full strength. The recoveries were quickened in some cases when it was used more frequently; that is, every two hours, instead of four times daily.

Dixon National Bank Building.

15. Rasmussen, A. T.: Arch. Phys. Therapy 15:676-680 (Nov.) 1934.

BENIGN LYMPHOCYTIC MENINGITIS

(ASEPTIC MENINGITIS)

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Since the beginning of this century a benign disease characterized by headache and meningeal symptoms has been reported in Europe. Local epidemics of such a disease in France in the years 1910 and 1913 were thought to be abortive forms of poliomyelitis, and in 1922 to 1924 similar epidemics in Europe were ascribed to encephalitis. Wallgren[1] reviewed these reports in 1925 and suggested that the disease, which frequently occurred in epidemics, might be a separate clinical entity and he called it "acute aseptic meningitis." He also suggested that a virus might be the etiologic agent. The criteria he considered necessary for such a diagnosis were (1) an acute onset of meningeal symptoms; (2) changes in the cerebrospinal fluid characteristic of meningeal irritation, with a slight or moderate increase in the number of cells, especially of lymphocytes; (3) sterility of the fluid, both on direct examination and in appropriate culture mediums; (4) a short, mild course of the disease with no complications; (5) the absence of any condition that might lead to meningeal irritation, such as otitis media, sinusitis, trauma, and especially of any acute or chronic infection; (6) the absence in the community of any disease that characteristically involves the central nervous system.

Since Wallgren's review, numerous reports of the disease have been made in this country as well as in Europe. This material has been reviewed completely

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1. Wallgren, A.: Une nouvelle maladie infectieuse du système nerveux central? Acta paediat. 4:158, 1925.

by Abramson,[2] who had observed eight such patients. Toomey [3] has recently reported the occurrence of the disease in seventy patients.

Considerable controversy has arisen with regard to the possible etiology. Many clinicians hold to the belief that the disease is a form of epidemic encephalitis or of poliomyelitis, while others consider it to be a separate and distinct disease. There have been few reports concerning the etiologic factors of this disease. Eckstein [4] injected the cerebrospinal fluid of three patients having this type of meningitis into the spinal canals of monkeys and observed a meningomyelitis in one animal but no changes characteristic of poliomyelitis or encephalitis. Rivers and Scott [5] were able to produce in animals a meningeal reaction with an increase in the number of mononuclear cells by injections of cerebrospinal fluid obtained from two patients with aseptic meningitis. These patients slowly developed in the blood serum antibodies to this virus. The strain of virus obtained in these experiments was similar to that found by Armstrong and Lillie,[6] who isolated from patients of the St. Louis epidemic of encephalitis a strain that produced a choriomeningitis in animals. Subsequently Armstrong and Wooley [7] reported that they had found two additional strains of this virus in experimental animals and that specific antibodies had been discovered in the blood serum of some uninoculated animals and in one person who had recovered from an attack of choriomeningitis eleven months previously.

Our purpose in this report is to present the characteristics of an epidemic of atypical meningitis in Cincinnati in 1935. Twenty-two children were observed in the Children's Hospital and in the pediatric wards of the Cincinnati General Hospital.

TABLE 1.—*Distribution of Patients According to Season, Sex, Color and Age*

Season														
January 1	June 2	July 7	August 10	September 1	October 1									
Sex and Color													Black	White
Male													8	12
Female													6	4
Age in years	3	4	5	6	7	8	9	10	11	12	13	14	15	
Number of patients	1	3	3	3	1	2	2	4	2	1	1	..	1	

TABLE 2.—*Summary of Symptoms and Physical Signs*

Total Number of Patients, 22

	Number of Cases	Per Cent
Symptoms		
Headache	21	95
Vomiting	17	77
Infection of upper respiratory tract	14	64
Abdominal pain	12	55
Drowsiness	9	41

Physical signs	Present	Suggestive	Absent
Rigidity of neck	15	5	2
Brudzinski	7	10	5
Kernig	9	5	8

2. Abramson, J. L.: Acute Lymphocytic Meningitis, Arch. Neurol. & Psychiat. **33**: 1235 (June) 1934.
3. Toomey, J. A.: Acute Lymphocytic Meningitis? J. Pediat. **8**: 148 (Feb.) 1936.
4. Eckstein, A., quoted by Abramson.[2]
5. Rivers, T. M., and Scott, T. F. McN.: Meningitis in Man Caused by a Filtrable Virus, Science **81**: 439 (May 3) 1935.
6. Armstrong, Charles, and Lillie, R. D.: Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by a Virus Encountered in Studies of the 1933 St. Louis Encephalitis Epidemic, Pub. Health Rep. **49**: 1019 (Aug. 31) 1934.
7. Armstrong, Charles, and Wooley, J. G.: Studies on the Origin of a Newly Discovered Virus Which Causes Lymphocytic Choriomeningitis in Experimental Animals, Pub. Health Rep. **50**: 537 (April 19) 1935.

REPORT OF EPIDEMIC

All but three patients of the group of twenty-two contracted the disease in the summer months. The disease was fairly uniformly distributed throughout the various age groups (table 1). Several adults in the community were said to have developed symptoms of this illness during the same period but none of them came under our observation and are not included in this report. The racial distribution was similar to that of the average population of our two hospitals.

The majority of the children were referred to the hospital because of suspected meningitis. The onset of illness was reported by the parents to be sudden in twelve cases and in no instance had the child been sick more than a week before admission to the hospital. The frequency of the symptoms and physical signs of the illness are recorded in table 2.

Headache, practically always present, was located in the frontal region in eight children, but in no instance was the symptom as severe as usually encountered in meningococcic meningitis. The pain was alleviated by the withdrawal of from 10 to 50 cc. of the cerebrospinal fluid, which was usually found to be under greater pressure than normal. Vomiting was not projectile and tended to disappear as the general condition of the patient improved. Mild sore throat, rhinitis and nasopharyngitis were noted in fourteen patients and were included under the heading of infections of the upper respiratory tract. Otitis media was not present imme-

TABLE 3.—*Summary of Laboratory Data*

	Number of Patients
Tuberculin reactions	
Negative	15
Positive	2
Not done	5
Cerebrospinal fluid	
Appearance	
Clear	17
Slightly turbid	4
Cloudy	1
Globulin	
Negative	11
Trace	10
Greatly increased	1
Cell counts	
50 to 300 cells (inclusive)	17
300 to 600 cells (inclusive)	3
900 to 1,100 cells	2
Type of cell	
Predominance of lymphocytes	12
Predominance of polymorphonuclears	5
Chlorides	
Normal (720-750 mg. per 100 cc.)	5
Lower than normal	1
Not done	16
Sugar*	
(Qualitative) present	21
(Qualitative) absent	1
(Quantitative) normal (50-75 mg. per 100 cc.)	4
Ratio of quantitative sugar of the cerebrospinal fluid to that of the blood	
Normal (45-70 per cent)	6
High	1
Not done	15
Wassermann or Kahn test	
Negative	4
Not done	18
Gold curve	
No reaction	3
Not done	19
Blood serum reaction (Wassermann or Kahn)	
Negative	17
Positive (known syphilitic)	1
Not done	3

* Ratios on blood and cerebrospinal fluid taken simultaneously under postabsorptive conditions. (Peters and Van Slyke: Quantitative Clinical Chemistry, Baltimore, Williams and Wilkins Company **1**: 192, 1931.)

diately before or during the illness. Abdominal pain was a symptom in twelve instances. The pain was located in the epigastrium in four children, in the left lower quadrant in one, and generalized in the other seven. Localized abdominal tenderness was not elicited by palpation in any patient. It is important to note that abdominal tenderness was the outstanding symptom in the epidemic of pleurodynia occurring in this city at

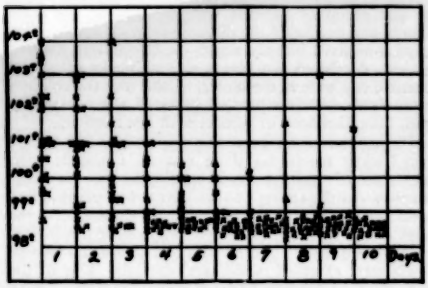

Chart 1.—Composite chart of daily temperature readings of the entire group.

the same time.[8] However, in the patients with the latter disease the pain was located characteristically along the costal margin and their cerebrospinal fluids were normal. Drowsiness was noted in less than half of the group of patients but it never was a marked symptom and no child lapsed into coma or delirium. Convulsions, diarrhea or constipation did not occur in any patient.

Physical Examination.—The usual conditions found were stiffness of the neck and positive Kernig and Brudzinski signs. One or more of these tests was positive in all but one child and all three signs were present in five children. In the one instance in which none of these tests were elicited the symptoms of vomiting and headache led to the suspicion of the illness, and the contents of the cerebrospinal fluid confirmed the diagnosis. In other respects the neurologic examination of these patients was negative except for the finding of a ptosis of the eyelids in one child and a weakness of the facial muscles on one side in another. Since these changes were noted during the initial examination and the parents had not noticed any change in the children's facial expression, it was questionable in each case whether such lesions were recent or had been present before the onset of the illness.

Fever.—The highest temperatures were 104 F. on admission to the hospital. Defervescence was rapid and complete by the end of seven days except in the instance of one patient who had a secondary rise of temperature on the ninth day as the result of a serum reaction. This patient had received antimeningococcus serum because of the suspicion that the illness was due to the meningococcus. The majority of patients were sick only one to three days before admission to the hospital and never more than seven days, so the duration of the fever may be said to be two weeks; while in the majority of patients fever lasted only about one week. Chart 1 indicates the composite picture of the duration of fever.

Blood Leukocytes (chart 2).—The total number of leukocytes in the blood ranged between 7 and 18 thousand per cubic millimeter with ten children of the group (45 per cent) having less than 10 thousand. In fourteen (64 per cent) the proportion of polymorphonuclear neutrophils was increased above normal. In only one patient did the lymphocytes constitute more than 50 per cent of the total number of cells.

Cerebrospinal Fluid (table 3).—The fluid was generally clear, the globulin content was increased above normal in about half the number of patients and the number of cells present was from 50 to 200 in the majority of instances but reached as high as 1,100. The cell counts dropped to 10 or less within one to three weeks after the onset of the illness, and the cerebrospinal fluids of two patients examined more than a month later were normal. Lymphocytes were the predominant cells. In five patients the initial differential count showed a predominance of the polymorphonuclear neutrophils, but after a few days the lymphocytes were more numerous. In the early part of the epidemic a few patients were referred to the hospital with the diagnosis of probable meningococcic meningitis and were treated with specific antiserum before the cerebrospinal fluid could be examined. Subsequent cell counts of the cerebrospinal fluid of these patients, of course, showed a reaction to the serum but these results were not included in the table. Examinations and cultures of the fluids in nutrient blood agar, dextrose ascites agar and brain broth[9] were negative for microorganisms in every instance.

Dr. T. F. McNair Scott of the Rockefeller Institute examined the blood serums of three patients for anti-

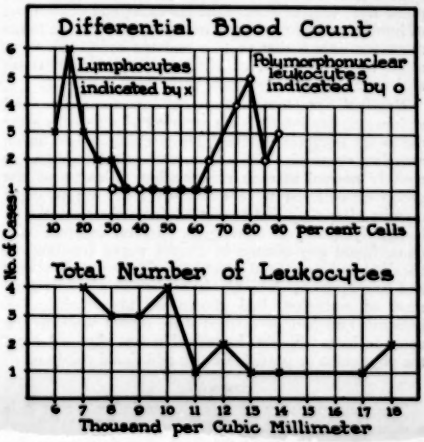

Chart 2.—Total number of leukocytes and the differential counts.

bodies of the virus isolated by Dr. Rivers and himself.[9] The serums were collected about seven months after the patients had recovered from their illnesses and the specimens of two patients showed a weakly positive neutralizing power against the virus. The serum of the third patient was negative.

8. Harder, F. K.: Epidemic Myalgia or Pleurodynia in Southwestern Ohio, Am. J. M. Sc. **191**: 678 (May) 1936. Hewell, Barbara A.; Macdonald, R., and Cooper, M. L.: Pleurodynia, to be published.

9. Cooper, M. L.; Keller, Helen M., and Johnson, Barbara: Acute Enteritis in Infants and in Young Children, Am. J. Dis. Child. **47**: 388 (Feb.), 596 (March) 1934.

Differential Diagnosis. — Several diseases involving the central nervous system resemble in their symptomatology the type of illness described in this group of children. In the presence of an epidemic of poliomyelitis we would have suspected an abortive form of this disease, but the absence of a single case of paralysis in the community led us to doubt such a diagnosis. Negative Wassermann or Kahn tests of the cerebrospinal fluid tended to eliminate the presence of syphilis of the central nervous system. The blood of one patient, known to have syphilis, gave a positive Kahn reaction but his cerebrospinal fluid was negative with both the Kahn and the colloidal gold test. Only two patients had positive tuberculin tests on admission and there were no signs of tuberculous infection in this group except one instance of suspected hip joint infection. The absence of tubercle bacilli in the cerebrospinal fluids of the patients examined and the normal quantitative sugar determinations of the fluids indicated the absence of tuberculous infections. Several guinea-pigs inoculated with the material obtained from lumbar puncture remained well. The rapid recovery of this group of patients likewise spoke against tuberculosis. The diagnosis of encephalitis was more difficult to eliminate, but opposed to it were (1) the facts that cranial nerve involvement was absent except in the two instances of ptosis and unilateral facial weakness mentioned, (2) meningeal symptoms and signs predominated, and (3) the patients made rapid and complete recoveries.

Treatment. — Besides the removal of cerebrospinal fluid to relieve the intracranial pressure, treatment was limited to sedatives. Phenobarbital, codeine and morphine were used to relieve the headache and discomfort of lumbar puncture. It was necessary to continue treatment for only a day or two and the symptoms were much more mild and of shorter duration than those accompanying meningococcic meningitis.

Residual Symptoms.—Four children were examined at fourteen day intervals for a period of six weeks after the onset of their illness. These children had made complete recoveries and the cerebrospinal fluids were entirely normal at each examination. Twelve of the group of children were examined from six to eight months after they had recovered from their attacks of benign lymphocytic meningitis. In no instance was there found any change in cranial nerve function, in the deep and superficial reflexes, or in the muscle power and coordination. The children were in a satisfactory state of nutrition, had shown no abnormalities of behavior and had performed their school work in the usual fashion. Similar information was obtained from the physicians or parents of two additional children.

COMMENT

The characteristics of this disease indicate that it is a clinical entity. The criteria suggested by Wallgren for the diagnosis of the condition were fulfilled in this epidemic. We prefer the designation "benign lymphocytic meningitis" to "aseptic meningitis." Benign lymphocytic meningitis may have occurred much more frequently than the reports in the literature indicate, and without doubt this symptom complex has frequently been diagnosed as an abortive form of poliomyelitis, encephalitis or meningococcic meningitis. Occasionally benign meningeal reactions diagnosed as serous meningitis or lymphocytic meningitis occur in children coincident with such diseases as pneumonia, otitis media or mastoiditis, typhoid fever or streptococcic infections, but they do not belong in the category of benign lymphocytic meningitis. Whether or not the etiologic agent of this type of meningitis is related to that of poliomyelitis or of encephalitis will have to await further bacteriologic investigation. It is certain that the clinical symptoms, as we have observed them, differ in many ways from either of these diseases.

The disease does not appear to be contagious. Two of our group of patients were siblings of the same family and developed the disease one week apart. One child, who lived directly across the street from another patient, developed the illness several weeks after any possible exposure to the illness. Otherwise the children came from widely separated parts of the community with little likelihood of contact with one another.

During the winter preceding the epidemic of benign lymphocytic meningitis there was an unusually high incidence of meningococcic meningitis in the community. In the spring of that year a few patients had meningeal symptoms associated with mumps. At the peak of the epidemic of benign lymphocytic meningitis, more than seventy children who had contracted pleurodynia were observed in the two hospitals. One of the patients, who developed benign lymphocytic meningitis, had recovered from an attack of pleurodynia one week before the onset of the meningeal symptoms. At the same time a severe form of diarrhea developed in newly born infants in the nurseries of several hospitals, and this disease was accompanied by a severe toxemia and a high mortality rate.

The incidence of other diseases in the community was about the same as in other years. No cases of poliomyelitis were reported in the community for a year before or after the epidemic of benign lymphocytic meningitis, and only an occasional patient with encephalitis was observed during the same period of time.

SUMMARY

1. Symptoms of benign lymphocytic meningitis were observed in a group of twenty-two children during the year 1935.

2. The peak of this small epidemic occurred in the months of July and August. The disease developed in widely separated areas of the community except in two instances, so that contact with known patients could not have been responsible for its spread.

3. Characteristic symptoms of the disease were headache, vomiting and abdominal pain. On physical examination rigidity of the neck and positive Kernig and Brudzinski signs were most frequent.

4. Most of the cerebrospinal fluids contained from 50 to 200 cells, chiefly lymphocytes, and the globulin content was greater than normal in about half of the group. The fever was of short duration, and in nineteen of the twenty-two cases the leukocytes of the blood were not increased above normal figures.

5. Recovery was rapid and complete. More than half of the group were examined from six to eight months after recovery from the disease but no evidence of residual symptoms and signs or of changes in behavior could be discovered.

6. The mildness of the infection, its epidemic characteristics and the absence of any other disease in the patients or in the community to account for the illness has led us to suspect that it was a definite disease entity, possibly of a virus nature.

Clinical Notes, Suggestions and New Instruments

AGRANULOCYTOSIS ASSOCIATED WITH THE ADMINISTRATION OF "NOVALDIN," A DERIVATIVE OF AMINOPYRINE

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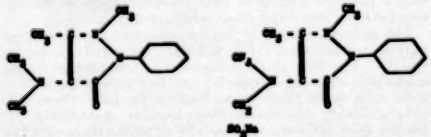
That aminopyrine is capable of causing agranulocytosis is now generally recognized. There is ample evidence that because of this danger informed physicians have either wisely stopped prescribing aminopyrine or are using it with the utmost care. In Denmark, where the medical profession has been induced to refrain from the prescription of the drug, not a single case of angina agranulocytica has occurred.[1]

On the other hand, most physicians are not organic chemists and when confronted with "Novaldin, Brand of Dipyrone (Sodium phenyldimethylpyrazolon methylaminomethane sulphonate)," [2] cannot be expected to know that it is a derivative of aminopyrine and contains the chemical radical that has been etiologically related to agranulocytosis. "Novaldin" is in fact aminopyrine with the substitution of the sodium salt of methyl sulfonic acid for one of the methyl groups attached to the amino nitrogen. This simple chemical maneuver, called "sulfonation," is commonly employed to increase the solubility of a compound without materially altering its chemical and pharmacologic properties. The essential similarity of aminopyrine and "Novaldin" is evident from the structural formulas:



Aminopyrine. "Novaldin."

Theoretically "Novaldin" should share with aminopyrine the potentiality of causing agranulocytosis. That this is true is suggested by the experiment of Benjamin and Biederman.[3] These authors administered 10 grains (0.6 Gm.) of "Novaldin" to a volunteer who had had several attacks of agranulocytic leukopenia due to aminopyrine and were able to produce a prompt neutrophilic leukopenia accompanied by malaise, headache, backache and slight pyrexia.

In the following report the occurrence of a fatal case of agranulocytosis associated with the administration of "Novaldin" is recorded, with autopsy.

REPORT OF CASE

History.—N. A. B., a white man, aged 43, married, Swiss-American, an inspection engineer, was admitted to the New Haven Hospital, Jan. 28, 1935, at 4 p. m., because of difficulty in breathing.

For approximately twenty years the patient had been troubled with minor digestive disturbances and frontal headaches associated with emotional upsets, anxiety or eyestrain. Otherwise he had been in good health.

Five months before admission the patient consulted his physician because of headaches. The physician warned him against aminopyrine, because of the danger of agranulocytosis, and prescribed instead "Novaldin." The patient took this drug every day, with occasional omissions. The exact dosage taken, however, is not known. In December 1934 phenobarbital, one-third grain (0.02 Gm.) three times a day, was prescribed for the patient's minor digestive disturbance.

From the Department of Internal Medicine of Yale University School of Medicine and the New Haven Hospital.

1. Granulocytopenia and Aminopyrine, Netherlands Letter, J. A. M. A. 107: 891 (Sept. 12) 1936.
2. Winthrop Chemical Company.
3. Benjamin, J. E., and Biederman, J. B.: Agranulocytic Leukopenia Induced by a Drug Related to Aminopyrine, J. A. M. A. 107: 493-494 (Aug. 15) 1936.

January 23, five days before admission, the patient was exposed to the cold during a six hour automobile trip. On his return home he felt chilly, unusually fatigued, and went directly to bed. The next day he continued to feel chilly and developed a headache, which persisted throughout the illness. After an alcoholic drink he returned to bed. During the night he perspired profusely. The following day, three days before admission, his throat felt sore, his tonsils seemed swollen, and a temperature of 102 F. by mouth was recorded. His condition grew rapidly worse and a physician was called, who swabbed his throat with a 3 per cent solution of silver nitrate and prescribed a gargle containing potassium chlorate and ferric chloride and morphine one-eighth grain (0.008 Gm.). The patient also took a number of acetylsalicylic acid tablets.

The day before admission slight jaundice and rapidly increasing obstruction to breathing appeared. Cyanosis developed and on the day of admission it was feared that he would choke to death. Hospitalization was ordered.

Physical Examination.—On admission the body temperature was 104.5 F., pulse 143, respiration 40, and blood pressure 130 systolic, 80 diastolic. The patient was desperately ill, perspiring freely, restless, apprehensive and quite unable to talk. Inspiratory stridor, cyanosis and dyspnea were pronounced. The accessory muscles of respiration were brought into play. The breath had a foul, gangrenous odor. The tonsils and oral pharynx were inflamed and boggy and showed ulcerative necrotic lesions covered with a firmly adherent, dirty, grayish black membrane. When this was removed in part, it left an ulcerated surface with many bleeding points. Except for inflammation and edema, the uvula, soft palate and anterior pillars were not conspicuously involved. The soft tissues of the neck were edematous and the tonsillar and anterior cervical lymph nodes were greatly enlarged. No abnormalities were discovered on examination of the lungs. Except for tachycardia, the heart appeared normal. The liver edge was felt 2 cm. below the costal margin. The spleen could not be felt.

Laboratory Examination.—Blood studies were as follows: red blood cells 5.0 million; hemoglobin 90 per cent of 15.4 Gm.; white blood cells 150. On examination of the smear only 20 leukocytes were seen, on which 2 were monocytes and the remainder lymphocytes. These cells did not appear abnormal. The red blood cells and platelets were normal in number and appearance. Fluctuations in the number of leukocytes are given in the table.

Fluctuation in Number of Leukocytes

		Leukocytes	Differential Count
1/29	4:00 p. m.	150	20 cells: 18 lymphocytes, 2 monocytes
	9:00 p. m.	250	10 lymphocytes
	10:00 p. m.	Transfusion 500 cc.	
	11:30 p. m.	100	4 lymphocytes
1/30	8:30 a. m.	450	No neutrophils seen
	11:00 a. m.	Liver extract from 500 Gm. of liver	
	12:00 noon	Transfusion 500 cc. blood	
	1:30 p. m.	1,950	10 lymphocytes, 2 monocytes
	3:00 p. m.	600	7 lymphocytes, 2 monocytes

The urine was deep amber, acid, had a specific gravity of 1.018, albumin 4+, sugar 0, bile 2+, no sediment, and the Kahn test was negative. The icteric index was 100. Blood nonprotein nitrogen was 81 mg. per hundred cubic centimeters. Throat cultures revealed nonhemolytic streptococci +, Staphylococcus aureus +, diphtheria bacilli 0. Blood cultures revealed Streptococcus viridans +, a gram-negative bacillus, probably B. coli, +. The direct smear from the throat was chiefly remarkable for its complete absence of leukocytes.

Clinical Course and Treatment.—On admission to the hospital, the patient was immediately placed in a steam room and kept there for three hours. Because of his critical condition and the possibility of fulminating diphtheria, which could not be definitely dismissed at this time, 20,000 units of diphtheria antitoxin was given intravenously and 40,000 intramuscularly shortly after admission. One hour after entry into the hospital 1,500 cc. of saline solution and 100 cc. of 5 per cent dex-

trose were given by hypodermoclysis and two hours later 50 cc. of 50 per cent dextrose intravenously. Shortly thereafter, 5 cc. of liver extract derived from 500 cc. of whole liver was injected intramuscularly. Four hours after admission a tracheotomy was performed, giving immediate relief from dyspnea and cyanosis. Despite intensive treatment, which included two blood transfusions of 500 cc. each, the parenteral administration of liver extract, pentnucleotide and clyses of saline solution and dextrose, the patient became progressively worse and died on the day following admission. He remained conscious and rational to the end.

Autopsy—Postmortem examination, performed by Dr. Lincoln Opper of the department of pathology, was made two hours and fifty minutes after death. Jaundice was pronounced. There was marked nonfluctuant swelling of the anterolateral aspects of the neck, which appeared to involve the chains of anterior cervical lymph nodes. The posterior chains of cervical lymph nodes also were somewhat enlarged. The uvula, posterior third of the tongue, tonsils, epiglottis and pharynx as far down as the larynx were covered with a green-black sheet of necrotic exudate, which was unusually thick, measuring several millimeters in places. At a few small points this exudate had sloughed off, revealing tissue that had a red and hemorrhagic appearance. On examination of a preparation of the laryngeal portion of the pharynx taken from an area that was only moderately involved in the process, the tissue was seen to be completely denuded of its necrotic, stratified, squamous epithelium. A dense band of pink fibrin filled the loose meshwork of connective tissue. The walls of almost all the small vessels were necrotic. The muscle tissue in this region had lost its striations and in many places stained a smudgy gray-blue. The complete absence of the type of cell, the neutrophilic leukocyte, usually observed in a necrotizing process of this kind, was striking. A few lymphocytes and an occasional plasma cell were seen. A preparation from another portion of the pharynx presented a similar picture, but it included a portion of a lymph node which was completely necrotic in its central portion.

The edges of the tracheotomy wound were gray, ragged and necrotic. There were small subepithelial hemorrhagic zones about the wound. Microscopic examination of a section of the trachea revealed a relatively intact epithelial lining, beneath which, however, the connective tissue was filled with extravasated red blood cells, but there was a complete absence of neutrophilic leukocytes.

Except for extreme engorgement of the right side, particularly the right auricle, the heart was normal. It weighed 340 Gm.

The right lung weighed 450 Gm., the left 600 Gm. The extreme apexes of both lungs were puckered, firm to palpation and apparently fibrous. The absence of yellow-white or gray formations in the clotted blood in the pulmonary vessels, as well as within the heart chambers, was striking. There were extensive subepithelial hemorrhages in the bronchi and particularly the bronchioles. The lumens of these structures contained moderate amounts of tenacious, yellow-red, mucoid material, but the epithelium of the bronchi did not appear grossly necrotic. Microscopic preparations of the deeper lung portions revealed a blurring of the alveolar architecture due to the extreme extravasation of blood edema fluid and large amounts of fibrin into the alveolar spaces. The absence of white blood elements everywhere was striking. Many bacteria were found in the bronchial lumens and within the alveolar spaces. In several places the bronchial epithelium was sloughed off and necrotic.

The spleen was moderately large and very firm. It weighed 290 Gm. On the cut surface the parenchyma had an unusually homogeneous deep red appearance. Microscopically, the malpighian corpuscles appeared normal in number but were definitely smaller and less cellular than usual. The reticuloendothelial architecture of the red pulp stood out prominently, owing to the complete absence of nucleated blood cells within the sinusoids. These contained only red blood elements.

The liver extended 5 cm. below the costal margin in the midclavicular line and 6 cm. below the tip of the xiphoid. It weighed 2,165 Gm. The cut surface of the liver was homogeneous and chestnut brown. On microscopic examination the sinusoids and central veins were seen to be enormously distended. Cell necrosis was marked about the central veins, but there was no increase of fibrous connective tissue to replace the destroyed cells. The remaining hepatic cells lay singly and contained much yellow-brown pigment in their cytoplasm. Nuclei were frequently missing. In the peripheral portions of the lobules, the cords of cells were relatively intact. The periportal tissue was free of cellular infiltration. The gallbladder and bile ducts were not remarkable.

The pancreas, stomach and intestine were not remarkable.

The kidneys were unusually large; the right weighed 230 Gm. and the left 250 Gm. On the cut surface the cortices were unusually wide, measuring 8 mm. Microscopically an occasional hyalinized glomerulus was seen. The tubular epithelium was everywhere swollen and the cytoplasm of the cells was granular in appearance. The cell nuclei were frequently absent, and many pink hyaline casts were seen in the tubular lumens. The interstitial tissue was loose and extremely edematous. The adrenals together weighed 20 Gm. and were not abnormal. The pelvic organs were not remarkable.

Examination of the bone marrow was made by Dr. Robert M. Thomas. The usual amount of marrow tissue was present, with no obvious hyperplasia or hypoplasia. The erythroid group was represented by a predominance of normoblasts, with some early and late erythroblasts present but not in unusual numbers. The total number of red cell elements seemed to be from 30 to 40 per cent of the total. There was a marked increase in the number of megalokaryocytes, which were seen in all stages of growth and senescence. Four or five in a low power (× 100) field was the average. These cells were for the most part poorly stained and fragmented, with only the younger mononuclear and binuclear forms staining well. There were a moderate number of large phagocytic cells which contained cellular and other débris within their vacuoles.

The striking feature of the marrow was the absence of mature polynucleated cells, metamyelocytes and myelocytes type C. The bulk of the marrow was composed of young myelocytes, classified as type B, with just enough granules to make up a small clump in one side of the cell. These cells were strikingly uniform in their level of development. It appears as if cell maturation as well as cell multiplication had come to a resting point at a low level.

On postmortem bacteriologic examination the following organisms were isolated: heart blood, Streptococcus viridans; lungs, Staphylococcus aureus, Streptococcus viridans, Bacillus influenzae, diphtheroids; liver, Bacillus coli, Streptococcus viridans; spleen, Bacillus coli, Streptococcus viridans; kidneys, Bacillus coli, Streptococcus viridans; trachea, Staphylococcus aureus, Streptococcus viridans, Bacillus influenzae, diphtheroids.

Anatomic Diagnoses.—Primary: Acute necrotizing tonsillitis, glossitis, epiglottitis, pharyngitis, cervical lymphadenitis, hypoplastic bone marrow, edema of larynx, wound of tracheotomy, acute bronchitis, pulmonary congestion and hemorrhage, cloudy swelling and edema of kidneys, generalized jaundice. Clinically: Novaldin (aminopyrine derivative) poisoning.

COMMENT

There is a growing commercial practice to market familiar drugs or combinations of drugs under trade names with labeling that fails to give a clear and understandable description of the ingredients. In many instances, such as the present case, the true nature of the article is further masked by the introduction of minor chemical alterations. The representations made for these products, sold under distinctive names, are not infrequently beyond those that could be made for the simple drug under its recognized title and, of course, much more difficult to refute. This case serves as an illustration of the harm that may result from this practice.

One may ask the question, as it has been asked for cinchophen,[4] "Is there a safe method for administering aminopyrine and aminopyrine derivatives?" The abrupt onset without warning and the fulminating course of this case, and others that I have seen, lead inescapably to the same conclusion that there is no entirely safe method of administering aminopyrine.

New Haven Hospital.

4. Palmer, W. L., and Woodall, P. S.: Cinchophen—Is There a Safe Method of Administration? J. A. M. A. 107:760-765 (Sept. 5) 1936.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

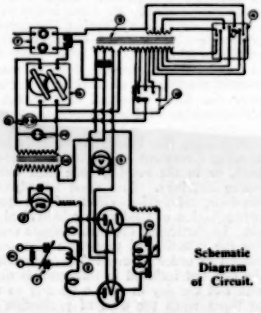
HOWARD A. CARTER, Secretary.

PEERLESS ULTRA SHORT WAVE GENERATOR, MODEL UW2-A, ACCEPTABLE

Manufacturer: Peerless Laboratories, Inc., New York.

The Peerless Ultra Short Wave Generator, Model UW2-A, is recommended for medical and surgical diathermy. It is a two-tube machine with a fixed wavelength of about 6 meters. The patient's circuit is inductively and capacitatively coupled to the oscillator circuit for medical and surgical diathermy.

Model UW2-A Peerless Ultra Short Wave Generator.



Schematic Diagram of Circuit.

Tuning of the patient's circuit is accomplished with a double condenser. Electric field electrodes of various sizes are provided as regular equipment. Evidence for the air-spaced electrodes and induction coil was not submitted. Only the cuff electrodes are considered herein.

For consistency of performance and maximum life to tubes and other component parts, a switching arrangement is incorporated in the machine which enables the physician to adjust the operating voltages on filament, grid and plate to line voltage variation within a range of from 105 to 135 volts in the power supply line.

When this machine is operated under full load it draws from the alternating current supply line not more than 1,200 watts. Since no reliable method has been proposed to measure the output energy available to the patient, the value is not given.

Averages of Eight Observations with Cuff Electrodes

Intramuscular Temp. F.		Subcutaneous Temp. F.		Rectal Temp. F.	
Initial	Final	Initial	Final	Initial	Final
97.0	105.5	93.2	103.5	99.4	99.7

The firm was asked to obtain evidence from a reliable investigator to substantiate the claims made for the unit. Using human subjects, the heating effect of the tissues in the thigh was observed. The cuff electrode method of application was investigated. Four vigorous men ranging in age from 23 to 35 years were obtained for the experiments. Temperature measurements were observed by means of thermocouples of the hypodermic type, before and after a twenty minute treatment. The temperature measurements were read on a potentiometer. Thermocouples were calibrated by a standard thermometer in degrees Fahrenheit. The intensity of the diathermy current was governed by the patient's skin comfort. Rectal temperatures were also observed. Cuff electrodes of size 3.8 by 37.5 cm. were wrapped around the thigh, one electrode at the proximal thigh and the other at the distal. The distance from center to center of the cuff electrodes was 2.3 cm. and the spacing of felt and toweling between the leg and cuff was about 2.5 cm.

Two observations were made on each patient, one on the right thigh and the other on the left, making a total of eight observations. The depth of insertion of the point of the thermocouple was approximately 2 inches, or until the femur was encountered. The subcutaneous temperature was taken at a depth of about one-eighth inch below the skin surface. Anesthetics were not used prior to insertion of the thermocouple.

Each item given in the accompanying table is an average of eight observations, application by cuff electrodes.

The results indicate that the temperature rise with the aforementioned method of application is considerably above what can be expected in the application of conventional diathermy—with a metal electrode on the medial aspect of the thigh and another metal electrode on the lateral aspect—the method of application that has been adopted as a minimum standard of acceptance.[1]

The temperature rise of the transformer, after the machine had been operated at full load for two hours, came within the limits of safety prescribed by the Council. The shipping weight of the apparatus is about 150 pounds. Burns may be produced but may be avoided by ordinary precaution. Their likelihood to occur is less than with conventional diathermy, employing metal electrodes.

The machine was used in a clinic acceptable to the Council and was operated under actual clinical conditions. It was reported as giving satisfactory service. In view of the favorable report based on the performance of this unit when employing cuff electrodes, the Council on Physical Therapy voted to include the Peerless Ultra Short Wave Generator, Model UW2-A, in its list of accepted devices.

EMERSON SUCTION PRESSURE APPARATUS ACCEPTABLE

(For Treating Peripheral Vascular Diseases)

Manufacturer: J. H. Emerson, Cambridge, Mass.

This apparatus is recommended by the firm for the treatment of peripheral vascular diseases of the extremities by alternating positive and negative pressure.

Essentially, the apparatus consists of an air compressor and vacuum pump, a "boot" or chamber in which the patient's limb is confined. The boot is of noninflammable celluloid and weighs 15 pounds. The cuffs are made of molded solid rubber and there are a number of smaller cylinders telescoping inside one another. In addition to the regular adjustments to set the amount of positive and negative pressures, there is an adjustment provided for altering the duration of the cycle of pressure change between ten and sixty seconds, and an adjustment for varying the time ratio of positive to negative pressure. The compressor is compact and movable and the shipping weight of the combined apparatus is about 200 pounds.

Emerson Suction Pressure Apparatus.

The apparatus was investigated in a clinic acceptable to the Council, and the investigator reported that the unit was capable of increasing collateral circulation.

The types of cases benefited by this type of apparatus appear to be acute vascular occlusion, frost-bite, and vascular diseases with major involvement of the large vessels. The contraindications appear to be thrombophlebitis, cellulitis or lymphangitis (acute or subacute), extensive destruction of the arteriolar or capillary vessels, advanced thrombo-angiitis obliterans with capillary stasis, and advanced arteriolar sclerosis with capillary stasis, and venous thrombosis.

1. Mortimer, Bernard, and Osborne, S. L.: Tissue Heating by Short Wave Diathermy, J. A. M. A. 104: 1413 (April 20) 1935.

This apparatus has a very limited field of usefulness and probably therefore does not belong in the armamentarium of the average physician. It belongs more in the realm of hospital equipment, since most of these rare arterial diseases are hospital cases.

In view of the satisfactory performance of this unit with reference to the treatment of acute vascular occlusion, freezing, and in vascular diseases with major involvement of the large vessels, the Council on Physical Therapy voted to include this apparatus in its list of accepted apparatus.

CAMERON CAUTERODYNE, MODEL H, ACCEPTABLE

Manufacturer: Cameron Surgical Specialty Company, Chicago.

This is a surgical diathermy unit recommended by the manufacturer for cutting, coagulating, dehydrating, desiccating and fulgurating. It is of the tube type construction and is said to be capable of cutting and coagulating under water. It comes equipped with foot switch and electrodes.

Cameron Cauterodyne, Model H.

The machine operates on alternating current and the wavelength is about 125 meters, or 2,400 kilocycles. The power consumption varies from 150 (2.5 amperes) for cutting to 220 watts (3.5 amperes) for coagulation. The maximum temperature developed inside the cabinet in using the machine for one hour—one minute on and one minute off—is 150 F.

This unit has been in service under practical conditions for six months in a clinic acceptable to the Council and has been found to be satisfactory.

In view of the favorable report on this unit, the Council voted to include the Cameron Cauterodyne, Model H, in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

PROTAMINE ZINC INSULIN.—A preparation of insulin modified by appropriate addition of protamine and a zinc salt. When this modified preparation in its precipitated form is brought into uniform suspension, each cubic centimeter contains 40 units of insulin together with from 0.30 to 0.50 mg. of protamine and from 0.08 to 0.10 mg. of zinc. The preparation contains, in addition, sufficient disodium acid phosphate to maintain its hydrogen ion concentration at not more than that corresponding to $p_H = 7.1$ and not less than that corresponding to $p_H = 7.4$. This buffering agent, in terms of its anhydrous salt (Na_2HPO_4), represents not less than 0.15 per cent and not more than 0.20 per cent of the final product. The preparation also contains approximately 1.6 per cent of glycerin as an agent for achieving of isotonicity, and 0.20 per cent of cresol or 0.25 per cent of phenol as a preservative.

Actions and Uses.—The effects of protamine zinc insulin are as described under Insulin-N. N. R., except that the blood-sugar-lowering action of unmodified insulin becomes maximal in from two to three hours, whereas the blood-sugar-lowering action of protamine zinc insulin is prolonged and has its greatest effect in about twelve to twenty-four hours after administration.

Protamine zinc insulin may be used in the case of any patient where regulation of diet is incapable of removing the cardinal objective symptoms of diabetes mellitus, and may replace, wholly or partly, the use of unmodified insulin in the treatment of the patient. In some cases the use of unmodified insulin alone is desirable; in others, protamine zinc insulin alone is indicated; while in others, the use of both preparations gives best results.

In view of the prolonged action of protamine zinc insulin, the chief indications for its use are in those cases where unmodified insulin is unable to provide control, without being administered in several doses daily, or is unable to provide adequate control unaccompanied by frequent hypoglycemic reactions, ketosis, or evidence of pronounced fluctuations in blood sugar levels. The usefulness of protamine zinc insulin in cases of diabetic coma, in diabetes complicated by infection, or in the event of surgical operations has not been definitely established. In such instances, therefore, the use of protamine zinc insulin to supplant the use of unmodified insulin is not recommended.

Dosage.—The general principles underlying the administration of protamine zinc insulin are the same as those governing the administration of unmodified insulin (see Insulin-N. N. R.).

Protamine zinc insulin is to be injected *only subcutaneously.* In most cases its administration more often than once a day is not required. The initial dose should be from about two-thirds to equal the number of units that would be needed daily to maintain the patient "sugar free" under treatment with unmodified insulin. In some instances glycosuria may follow owing to the slow absorption and consequent delayed action of protamine zinc insulin. Hence on the first few days when protamine zinc insulin is being used, it may be advantageous to administer a separate dose of unmodified insulin. It is usually possible to discontinue the use of unmodified insulin after the first or second day, though in some instances the administration of both preparations requires to be continued indefinitely.

Protamine zinc insulin is generally administered either in the morning (from one-half to one and one-half hours before breakfast), or in the evening (one hour before supper or one hour before retiring). Diet must be adjusted with the prolonged blood-sugar-lowering effect of the product in mind, and a redistribution of food among individual meals is usually desirable. In particular, the carbohydrate content of the meal following the injection of protamine zinc insulin may require to be limited in order to avoid *hyperglycemia.* The carbohydrate of the diet not included in this meal is divided between the other meals of the day in such a manner as to prevent *hypoglycemia* at times when the dose of protamine zinc insulin is exerting its greatest effect.

Symptoms of hypoglycemic reactions following administration of protamine zinc insulin are similar to but may be less obvious than those following injection of unmodified insulin, and may consist merely of a feeling of pronounced fatigue unwarranted by the activities of the patient. When a hypoglycemic reaction is occasioned by protamine zinc insulin, the reaction may be prolonged, and despite its having been treated, it may repeat itself owing to the continuing effect of the dose administered. It is therefore advisable to use both a soluble and a more slowly digestible carbohydrate in treating such reactions, for example, corn syrup with bread or bread with honey. Alternatively, and even though the patient may *appear* to be restored to normal through use of a soluble carbohydrate food such as orange juice, it is advisable to provide additional carbohydrate after the lapse of one or two hours. Soda biscuits and milk are suitable at that time. In severe reactions, it may be desirable to inject from 15 to 20 Gm. of dextrose in sterile solution intravenously, followed later by food.

In protamine zinc insulin, the insulin component is derived from batches previously tested and approved in their unmodified form; the protamine component is derived from sperm or mature testes of fish belonging to the family Salmonidae, genus Oncorhynchus, Salmo or Trutta; and the zinc component is derived from a solution of zinc chloride ($ZnCl_2$) in which 0.17 mg. of $ZnCl_2$ provides 0.08 mg. of zinc. Protamines are basic proteins of simple composition. These substances are prepared according to methods described by Kossel. (Kossel, A.: The Protamines and Histones, in Monographs on Biochemistry, translated by W. U. Thorpe, 1928 ed., pp. 18-19).

Protamine zinc insulin is supplied in vials. The filling of each vial includes two distinct operations in that an accurately measured appropriate quantity of a sterile acidic solution (insulin, protamine and zinc) is placed in the vial, followed, separately, by an accurately measured, appropriate quantity of a sterile alkaline solution (buffer). The resultant product is a suspension of finely divided particles.

Each filling of protamine zinc insulin is subjected to sterility tests as prescribed for turbid or precipitated biological products intended to be used parenterally. A sample of each batch of the preparation is tested by comparison with a sample of some other batch of the product that has proved satisfactory in laboratory and clinical trials. The sample under test is considered satisfactory only if, upon comparison by suitable methods of biological assay, its effects are shown to be essentially the same as the effects given by the other sample.

To estimate its zinc content, transfer about 1 cc. accurately measured, of the well mixed protamine zinc insulin to a 25 cc. platinum dish, add 0.3 cc. of 1:1 mixture of sulfuric acid and water; evaporate and ignite residue slowly (begin with the muffle door open, then increase the heat to around 650° with the door closed). After ashing, cool, add 15 cc. of water and 7 cc. of 3 normal hydrochloric acid. Evaporate the solution to one-half volume on the steam bath and filter into a 50 cc. Erlenmeyer flask. Wash the residue until the

volume of the filtrate is approximately 25 cc., add 3 drops of solution of bromphenol blue, followed by stronger ammonia water until the solution assumes a blue color, then add just enough hydrochloric acid to make the solution slightly yellow. Add approximately 5 cc. of sodium citrate buffer (12 Gm. sodium citrate, 23 Gm. citric acid in 100 cc. water) and adjust the entire mixture to a $p_H = 3.0$. The solution should now have a gray color—neither yellow nor blue. Warm the solution on a steam bath and rapidly pass in hydrogen sulfide for two minutes. (Iron may be reduced in slightly acid solution by using a little SO_2). Add 0.05 Gm. of acid and alkali washed talcum. Filter the solution through a Whatman filter No. 1 (7 cm.), wash with 10 cc. hydrogen sulfide saturated water containing 5 cc. of 90 per cent formic acid in 1 liter. After the filter is dry, elute the zinc with approximately 15 cc. 1 normal hydrochloric acid and transfer into a flat bottom Nessler tube. Add 2 cc. of 5 normal sodium hydroxide and fill up to 20 cc. Add 2 drops of 2 per cent potassium ferrocyanide, and compare with standards containing 0.05 mg. to 0.1 mg. zinc (nephelometrically): One cc. of protamine zinc insulin containing 40 units per 1 cc. should yield the equivalent of not less than 0.07 mg., nor more than 0.10 mg. of zinc. The zinc standard is made by dissolving 1 Gm. of pure zinc in concentrated hydrochloric acid, diluting it to 1 liter.

Patents and trademarks—See Insulin, N. N. R. Additional patents applied for.

Protamine, Zinc & Iletin (Insulin, Lilly).—A brand of protamine zinc insulin.

Manufactured by Eli Lilly and Company, Indianapolis, under license from the governors of the University of Toronto.

Protamine, Zinc & Iletin (Insulin, Lilly), 10 cc.: Each cubic centimeter contains 40 units of insulin, together with protamine and approximately 0.08 mg. of zinc.

Protamine Zinc Insulin.—Squibb.—A brand of protamine zinc insulin.

Manufactured by E. R. Squibb & Sons, New York, under license from the governors of the University of Toronto.

Protamine Zinc Insulin.—Squibb, 10 cc.: Each cubic centimeter contains 40 units of insulin together with protamine and approximately 0.08 mg. of zinc.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

ICHTHYOL READMITTED TO N. N. R.

Ichthyol, marketed by Merck & Co., Inc., Rahway, N. J., was included in New and Nonofficial Remedies until 1924. It was omitted because unwarranted claims were made for the product, as explained in a report published in THE JOURNAL (Feb. 16, 1924, p. 565). Merck & Co., Inc., requested reconsideration of Ichthyol in 1935 and has revised its advertising claims to conform with the Council's views as to the action and uses which are expressed in the article "Sulphoichthyolate Preparations and Substitutes," New and Nonofficial Remedies, 1936. Accordingly, the Council has reaccepted Ichthyol for inclusion in New and Nonofficial Remedies as a brand of Ichthammol, N. F.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

NORTH EAST BRAND TOMATO JUICE

Manufacturer.—North East Preserving Works, Inc., North East, Pa.

Description.—Tomato juice containing in high degree the natural vitamin values. Seasoned with salt.

Manufacture.—Selected tomatoes are harvested at the proper degree of maturity, inspected, graded, washed and again sorted, trimmed and cored by hand. The tomatoes are then chopped and heated in steam jacketed coils without exposure to air or live steam, after which they are forced through screens to extract the juice. Salt is added to the reheated expressed juice and it is immediately bottled or canned and processed.

Analysis (submitted by manufacturer).—Moisture 93.7%, total solids 6.3%, ash 0.7%, fat (ether extract) 0.1%, protein (N × 6.25) 1.3%, reducing sugars as dextrose 2.8%, sucrose 0.2%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 3.9 and p_H 4.9.

Calories.—0.21 per gram; 6 per ounce.

Vitamins.—The equipment and method of manufacture is such as to make possible the retention to a high degree of the vitamin content.

Claims of Manufacturer.—This tomato juice is a good source of vitamins A and B and an excellent source of vitamin C; for infant feeding and general table use.

(B) BAKER'S MAL-DEX PLAIN
(A) BAKER'S MAL-DEX WITH 2% SODIUM CHLORIDE
(C) BAKER'S MAL-DEX WITH 3% POTASSIUM BICARBONATE

Manufacturer.—The Baker Laboratories, Cleveland.

Description.—(B) Essentially a mixture of maltose and dextrins.

(A) Essentially a mixture of maltose and dextrins with 2 per cent sodium chloride added.

(C) Essentially a mixture of maltose and dextrins with 3 per cent potassium bicarbonate added.

Manufacture.—(B) The starch base is prepared from starch cereal from which the hulls and hearts have been removed. High diastatic malt (1 pound to each 100 pounds of cereal base) is added to the starch base, and the conversion extended until a definite ratio of maltose to dextrins is obtained (53% maltose to 44% dextrins), after which the liquid is filtered from the residue. The filtrate is decolorized, dehydrated and packed in tins.

(A) Essentially the same as (B) with 2 per cent sodium chloride added before the drying process.

(C) Essentially the same as (B) with 3 per cent potassium bicarbonate added after the dextrin and maltose mixture has been reduced to powder form.

Analyses (submitted by manufacturer).—(B) Moisture 3.0%, total solids 97.0%, ash 1.0%, protein (N × 6.25) 0.3-0.5%, maltose 52.5%, dextrin 43.5%, carbohydrates (by difference) 95.7%.

(A) Moisture 3.0%, total solids 97.0%, ash 1.0%, protein (N × 6.25) 0.3-0.5%, sodium chloride 2.0%, maltose 51.5%, dextrin 42.5%, carbohydrates (by difference) 95.7%.

(C) Moisture 3.0%, total solids 97.0%, ash 1.0%, protein (N × 6.25) 0.3-0.5%, maltose, 51.0%, dextrine 42.0%, potassium bicarbonate 3.0% and carbohydrates (by difference) 95.7%.

Calories.—3.84 per gram; 109 per ounce.

Claims of Manufacturer.—Carbohydrate supplements for the general diet of infants and invalids.

BISQUICK WITH WHOLE WHEAT

Manufacturer.—Gold Medal Foods, Incorporated, a wholly owned subsidiary of General Mills, Inc., Minneapolis.

Description.—A self-rising white and whole wheat flour containing vegetable shortening, acid phosphates, sucrose, skim milk powder, salt and baking soda; especially prepared for biscuits.

Manufacture.—The nonfat ingredients are thoroughly mixed in a batch-mixer; the shortening is added and all are again thoroughly mixed.

Analysis (submitted by manufacturer).—Moisture 9.5-10%, total solids 90.5-90%, ash 7.0-7.3%, fat (ether extract) 13.0-13.7%, protein (N × 5.7) 8.5-10.5%, crude fiber 1.3-1.4%, sucrose 3.2-3.4% and carbohydrates other than crude fiber (by difference) 60.7-57.1%.

Calories.—3.94 per gram; 112 per ounce.

Claims of Manufacturer.—A self-rising flour containing shortening already worked in and requiring only admixture with water or milk for the preparation of biscuits; the baked product has a whole wheat flavor.

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SATURDAY, FEBRUARY 20, 1937

SURGICAL TREATMENT OF MALIGNANT HYPERTENSION

In his classic monograph "Ueber den Zusammenhang von Herz und Nierenkrankheiten," Traube postulated in 1856 the compensatory theory of the development of elevated arterial pressure in diseases of the kidneys. He considered the elevation of the arterial pressure an effort on the part of the organism to overcome the mechanical resistance against blood flow and an effort to maintain the excretory function of the kidneys. With the introduction of accurate measurement of the blood pressure, hypertension was found to be one of the most frequent complications of renal disease. The conclusion was drawn that renal influences in some way contributed to the hypertension.

In an attempt to determine the nature of renal influence in hypertension, Page and Heuer [1] performed bilateral renal denervation on a patient suffering from essential hypertension uncomplicated by recognizable renal involvement and with but slight evidence of anatomic changes in the circulatory system. The level of the arterial blood pressure remained unchanged. The renal efficiency, as measured by the urea clearance test and the ability of the kidneys to concentrate, remained unchanged. They concluded that renal denervation is not effective in treatment of essential hypertension and that the hypertension does not originate in the nervous mechanism of the kidneys. Page [2] showed in clinical studies of cases of malignant hypertension, in cases of moderate hypertension and in cases with hemorrhagic nephritis that the efficiency of the kidneys, as measured by the urea clearance test, is not altered by a fall in the arterial blood pressure occurring spontaneously or induced by sodium thiocyanate administered by mouth. Neither was it controlled by colloidal sulfur administered intramuscularly in patients suffering from essential hypertension. He concluded that the abnormal elevation of blood pressure in these cases does not appear to assist in the maintenance of renal efficiency. This evidence does not support the compensatory theory of the cause of hypertension in patients suffering from nephritis or from essential hypertension.

The newest experimental procedure in hypertension is sympathectomy. Leriche demonstrated in extensive clinical material that vasodilatation can be produced and maintained by arterial sympathectomy. Brüning in 1923 suggested sympathectomy for control of hypertension. Adson and Brown [3] demonstrated that sympathetic ganglionectomy and trunk resection produce an increased blood flow, as measured in degrees of increased elimination of heat. They also found that following cervicothoracic ganglionectomy the caliber of retinal arteries and veins, as determined by the ophthalmoscopic micrometer, has been increased from a third to a half of the preoperative size. In their attempt to alter the vasomotor control of arteries below the diaphragm, the authors conceived the idea of sectioning the anterior spinal roots bilaterally from the sixth thoracic to the second lumbar, inclusive. The effect of this procedure would be to interrupt the thoracolumbar sympathetic outflow below the fifth thoracic segment and to paralyze the abdominal muscles. The authors hoped by this procedure to sympathectomize sufficient arteries to modify arterial responses, to sympathectomize thoroughly the suprarenal glands and to remove the effects of intra-abdominal pressure. They obtained a favorable result in a severe case of hypertension and felt that better results could be accomplished in younger patients with more flexible vascular systems. Page and Heuer [4] performed the same operation on a girl with a high arterial blood pressure but with a still flexible vascular system. The blood pressure level fell quickly to normal and has remained normal for seven months.

Freyberg and Peet [5] now report forty-eight cases in which the operation of splanchnicectomy, as devised by Peet, was carried out. The operation consists of a bilateral sectioning of the major and minor splanchnic nerves and of the lower dorsal sympathetic chain, including the tenth, eleventh and twelfth ganglions, supradiaphragmatically. In almost every case there was a sharp fall in blood pressure to normal or below immediately after the operation. The result was permanent in some and less permanent in others, while the blood pressure rose to the preoperative level in still others. The authors stress the fact that splanchnicectomy performed on patients with primary hypertension does not interfere with the functional efficiency of the kidneys, as measured by concentration and urea clearance tests, whether or not significant decrease in blood pressure results. When hypertension is greatly relieved by the

1. Page, I. H., and Heuer, G. J.: The Effect of Renal Denervation on the Level of Arterial Blood Pressure and Renal Function in Essential Hypertension, J. Clin. Investigation **14**:27 (Jan.) 1935.

2. Page, I. H.: The Effect on Renal Efficiency of Lowering Arterial Blood Pressure in Cases of Essential Hypertension and Nephritis, J. Clin. Investigation **13**:909 (Nov.) 1934.

3. Adson, A. W., and Brown, G. E.: Malignant Hypertension: Report of a Case Treated by Bilateral Section of Anterior Spinal Nerve Root from the Sixth Thoracic to the Second Lumbar, Inclusive, J. A. M. A. **108**:1115 (April 7) 1934.

4. Page, I. H., and Heuer, G. J.: A Surgical Treatment of Essential Hypertension, J. Clin. Investigation **14**:22 (Jan.) 1935.

5. Freyberg, R. K., and Peet, M. M.: The Effect on the Kidney of Bilateral Splanchnicectomy in Patients with Hypertension, J. Clin. Investigation **16**:49 (Jan.) 1937.

splanchnicectomy, renal function that has been previously impaired improves and may even return to normal.

In view of the extremely unfavorable prognosis of malignant hypertension, experimental attempts at its relief by surgical procedures, although still uncertain, appear to be justified in selected cases. Reports of further experience in institutions where such cases may be studied completely will no doubt yield evidence on which a definite evaluation of the method may be based.

CONTINUOUS DRIP BLOOD TRANSFUSION

Rapid introduction into the blood stream of a number of substances was shown by Hyman and Hirshfeld [1] in animal experiments to result in a state of shock characterized by a rapid fall of the blood pressure, irregularities of respiration and lack of coagulability of the blood. The reaction depended not so much on the nature of the substance as on the speed with which it was introduced. They therefore referred to it as "speed shock." They have also shown the tremendous tolerance on the part of the body to large intravenous doses of many substances and to the introduction of a great bulk of fluid, provided the rate of flow is reduced to 2 or 3 cc. per minute. Applying the drip method in clinical practice, these authors found it of great value in the prophylaxis and treatment of shock and hyperthyroidism, hemorrhage, coma, uremia and sepsis. They recommend that the flow be regulated to from 30 to 35 drops per minute.

Along with the brilliant results obtained with the method of blood transfusion, the clinician has encountered a number of failures. There is a group of cases characterized by a severe acute anemia and a lowered regenerative hematopoietic function in which the customary single so-called massive transfusion of a pint of blood fails to produce the desired effect. A still larger single dose is not safe, because of a possible embarrassment to the cardiovascular system. For such cases Marriott and Kekwick,[2] working in the Middlesex Hospital, London, conceived of the advisability of administering larger amounts of blood by the continuous drip method. They define "drip transfusion" as a large transfusion administered very slowly. They suggest that the dose of blood transfused be regulated by hemoglobin determination with the purpose of restoring the hemoglobin percentage to the neighborhood of the lower limits of normality—80 per cent. In the average adult, a pint of blood is equivalent to 10 per cent of the total hemoglobin and can increase the total percentage present only by that amount. The donors should all be compatible with the recipient and of the same group as one another to avoid agglutination.

Eighty-seven intravenous drip transfusions were performed at the Middlesex Hospital during 1935. The principal technical difficulty encountered in the use of citrated blood for drip transfusion was that the corpuscles tend to sediment in the reservoir and block the drip bulb. The authors have overcome this difficulty by bubbling a continuous stream of filtered oxygen through the blood, thus accomplishing a continuous stirring. They recommend a rate of flow of 40 drops per minute. The average amount infused per hour amounted to 133 cc., or 1 liter in seven and one-half hours. The largest single transfusion amounted to 6.3 liters, and the longest transfusion occupied sixty-two hours. The method was applied in cases of hematemesis and melena from peptic ulcer, in acute anemias from hemorrhage, in acute hemorrhagic colitis, as a preoperative measure, and in leukemia and purpura. They were able by this method to raise the hemoglobin from 20 or 25 to 90 or 100 per cent. The results were excellent and in some of their cases extraordinary.

Vinograd-Finkel, Dulcin and Yurovskaya,[3] reporting from the Central Institute of Hematology in Moscow, while essentially agreeing with the English workers, stated that in all their cases transfusions were accompanied by a febrile reaction. One or two hours from the beginning of the transfusion, when the patient had received about 200 cc. of the blood, there was a chill followed by a rise of temperature to 39 or 40 C. (102 to 104 F.). The febrile reaction lasted until the end of the transfusion and returned to normal in twenty-four hours. In spite of the protracted reaction, no untoward symptoms were noted in their sickest patients. The authors were particularly impressed with the safety of the slow method of blood transfusion. The advantages of the method appear to be that it allows introduction of much greater amounts than heretofore practiced and in its greater safety and more pronounced therapeutic effects.

1. Hyman, H. T., and Hirshfeld, Samuel: Studies of Velocity and the Response to Intravenous Injections, J. A. M. A. 96:1221 (April 11) 1931.
2. Marriott, H. L., and Kekwick, A.: Continuous Drip Blood Transfusion, Lancet 1:977 (April 27) 1935.
3. Vinograd-Finkel, Dulcin and Yurovskaya: Sovet. khir., 1936, No. 7.

HEALTH AND DISEASE IN THE MAGAZINES

In the *Ladies' Home Journal*, March 1937, Paul DeKruif writes on "The New Weapon Against Infantile Paralysis." In brief the article points out that infantile paralysis invades the body by way of the nose, presumably passing from the olfactory nerves to the brain and the spinal cord; that Armstrong and several other workers in the United States Public Health Service have shown that the spraying of these nerves with a picric acid-alum mixture prevented infection in monkeys, and that in mass experiments in the Southern states the method seemed to have value in human beings. The article indicates that workers in the University of Michigan determined that in most instances, unless the spraying was done in an exceedingly accurate manner, the spray failed to reach the olfactory nerves and thus failed of its purpose. It concludes with the evidence recently developed by Schultz and his co-workers in Stanford University that a 1 per cent

zinc sulfate solution has a better effect and is more satisfactory than the picric acid-alum solution; this evidence has been developed wholly on monkeys, and human experiments are not yet available to prove the efficacy of the zinc sulfate method in the human being. In his conclusion DeKruif recommends that physicians apply the zinc sulfate prevention method on a large scale wherever epidemics threaten next year and that health departments everywhere organize for the purpose. Time will no doubt show whether or not the method is as good as DeKruif seems to think it is.

The series of publications and educational activities associated with the periodical *Time* are devoting themselves in a serious manner to aiding the campaign against cancer. The current issue of the talking motion picture *March of Time* presents a lecture and a series of pictures which have received favorable comment from the medical profession wherever they have been shown. They would seem to be invaluable in educating the public regarding the nature of research against cancer, regarding the use of radium, the x-rays and surgery, and regarding the menace of cancer quackery. Advance reports indicate a special article on cancer which will appear in the March issue of *Fortune* magazine, and a photographic educational series which will appear in an early issue of *Life*. Already the *March of Time* broadcast on the radio has reflected to the public the new campaign against cancer. The headquarters of the Association has cooperated in these productions. This type of cooperation in the education of the public is important for the medical profession, and the publications concerned are hereby tendered the thanks of THE JOURNAL for the manner in which the work has been carried on.

A considerable contrast to the efforts previously described is the utter folly represented by the series of articles now being published in the *Cosmopolitan* magazine under the authorship of Rex Beach, who has promoted two foot manipulators, a cataract charlatan, a dietary quack and other exploiters of strange notions in the field of health and healing. Conspicuous also are the trumpery, charlatanism and pure silliness involved in such medical articles as have been published from time to time in *Esquire* and which are more recently being published in *Coronet*. It is inconceivable that either the publisher or the editor of these periodicals has even a reasonably competent understanding of the articles that are being published and certainly it is inconceivable that any competent physician is advising them. The promotion of Duncan and his system of autotherapy was, of course, utterly without any scientific warrant and disgusting besides.

The most recent explosion in relationship to medical economics was in the *Literary Digest* for January 30. The article seemed to average one or two errors of fact in every few paragraphs, varying from its exaggeration of the number of physicians on relief to one relative to the membership of the American Medical Association. The article stated that at one time there were 400 physicians on relief in Chicago, whereas it is doubtful that the number ever exceeded seven. Indeed, Harry Hopkins himself stated that the number for the whole country was approximately 675 physicians on relief. The article stated that the American Medical Association had 120,000 members, whereas it boasts of 104,000 members out of approximately 130,000 practicing physicians and 165,000 licensed physicians in the country. A complete statement has been sent to the *Literary Digest* relative to the disputed points in this article, and the editors of that periodical promise an extended consideration of the subject in a future issue.

Current Comment

PROTAMINE AND INSULIN PREPARATIONS

From its introduction fourteen years ago, insulin underwent relatively little modification until Hagedorn [1] and others of Denmark showed that the blood-sugar-lowering action of insulin was prolonged when it was combined with protamine.[2] The product was first called "Protamine Insulinate," "Insulin Protaminate," or "Insulin Protamine Compound." Later the generally accepted term was Protamine Insulin. Following the announcement of Hagedorn's results, much experimental work was undertaken. Scott and Fisher,[3] working at the University of Toronto, found that the addition of a zinc salt to a protamine and insulin mixture enhanced the prolongation effect of insulin in diabetic patients. Until recently the product given to investigators for clinical trials consisted of two vials. The contents were mixed by the physician before use. Various investigators in collaboration with the University of Toronto group have aided in the development of a pharmaceutically improved product of insulin, modified by the presence of protamine and zinc, which may be dispensed in a single vial. This product has now been designated "Protamine Zinc Insulin." Elsewhere in this issue appears a description of Protamine Zinc Insulin, now being manufactured under license by a number of pharmaceutical concerns. Physicians should read the epitomized description of the product and its actions, uses and dosage.[4] Protamine Zinc Insulin does not replace insulin (unmodified) in all cases or under all circumstances. Protamine Zinc Insulin may be used alone or used concurrently with the administration of unmodified insulin; or in some cases unmodified insulin may be used to advantage without employing Protamine Zinc Insulin. The choice of technic of administration depends on such factors as the diet of the patient, exercise, and pathologic complications. Further clinical experience may indicate certain limitations and advantages not yet recognized, and undoubtedly advances in the manufacture of this

1. Hagedorn, H. C.; Jensen, B. N.; Krarup, N. B., and Wodstrup, I.: Protamine Insulinate, J. A. M. A. **106**:177 (Jan. 18) 1936.
2. For the definition of Protamine, see the N. N. R. description of Protamine Zinc Insulin.
3. Scott, D. A., and Fisher, A. M.: Studies on Insulin with Protamine, J. Pharmacol. & Exper. Therap. **58**:78 (Sept.) 1936.
4. Protamine Zinc Insulin, N. N. R. department of THE JOURNAL, this issue, p. 640.

or similar products will occur. For the sake of consistency in nomenclature and to avoid confusion in medical literature, physicians and investigators should bear in mind distinctions between the following terms: Insulin as a term for the unmodified insulin of commerce. Protamine Insulin as a product essentially that described by Hagedorn, to which no zinc salt has been added.[5] Protamine Zinc Insulin for the product modified by the addition of protamine and a zinc salt, with other substances, and commercially available under the name Protamine Zinc Insulin.

OSTEOPATHY SEEKS FEDERAL APPROVAL

Maybe Congress will say that osteopathic manipulations and similar performances are good enough for sick and injured employees of the federal government. It is asked to do so by enacting a bill recently introduced by Senator Burke of Nebraska, S. 1233, and Representative Drew of Pennsylvania, H. R. 4650. Employees of the federal government are now entitled, under the United States Employees Compensation Act of 1916 as amended, to the services of qualified physicians, at government expense, when they are disabled by injury or disease arising out of the discharge of duty. The bill proposes to define the term "physician" so as to include osteopaths and to define the phrase "medical, surgical and hospital services and supplies" so as to include the services and supplies of osteopaths and osteopathic hospitals. If the Committees on the Judiciary of the Senate and the House of Representatives, to which this bill has been referred, give it serious consideration they will no doubt make the kind of investigation made in Great Britain to determine the soundness of the osteopathic hypothesis. They should find out how the practice of osteopathy today differs from the practice of medicine. They should look into the adequacy of osteopathic education and the suitability of osteopathic hospitals for the care of government employees. Without such investigations, intelligent action will be impossible. Notwithstanding the wide legislative recognition that has been given to the osteopathic cult, neither Congress nor any state legislature has ever seriously investigated it. The recent investigation by a select committee of the House of Lords resulted in the ignominious retreat and surrender of the osteopathic proponents of legislation then pending in parliament; they retired when they were confronted with the necessity for justifying the existence of osteopathy as a specific method of treating the sick. If the bill is passed, we may expect efforts to procure an osteopathic corps for the army, including an osteopathic veterinary corps, osteopaths in the naval service, an osteopathic public health service, an osteopathic bureau in the Veterans' Administration, and possibly osteopathic veterinarians in the Department of Agriculture. The farmers would find it interesting and amusing to apply osteopathic prophylaxis, diagnosis and treatment to sick and injured horses, cattle, sheep and swine.

5. Prior to the adoption of the name "Protamine Zinc Insulin" some preparations comprising protamine, zinc and insulin were supplied and referred to in publications under various designations, including the designation, "Protamine Insulin."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Bills Passed.—S. 54 XX has passed the Senate, proposing to create a board of medical technician examiners, to regulate the practice of medical technicians and to prohibit a person from practicing as a medical technician unless licensed by the board. The bill proposes to define "medical technician" as "a person who is engaged in the practice of standardized or experimental technical procedures, the results of which are interpreted by the physician in the diagnosis of disease. Provided, that this shall not apply to assistants employed by physicians to make laboratory tests whose results are to be used by such physicians in their private practice of medicine and who assume responsibility for the work so performed." H. 330 XX has passed the house proposing to impose an annual occupational tax on a person engaged in the practice of medicine, bacteriology or roentgenology of $25, if the licentiate practices in cities or towns of over 5,000 inhabitants; of $10, if the city or town in which the practice is carried on is from 1,000 to 5,000 inhabitants; and of $5, if the practice is carried on elsewhere.

ARKANSAS

Bill Passed.—S. 123 has passed the senate, proposing to create a chiropody examining board and to regulate the practice of chiropody. "Chiropody (sometimes called Podiatry)," the bill provides, "shall for the purpose of this act, mean diagnosis, medical, electrical, mechanical and surgical treatment of ailments of the human feet and massage and manipulation in connection therewith."

Arrest of Fraudulent Representative.—Albert Herschel Craven, self-styled student of criminology, was arrested January 26 when police were informed that he accepted $5 from Dr. James A. Foltz, Fort Smith, in payment for a cooperative insurance policy. Craven had been calling on physicians in Arkansas in the interest of the Cooperative Automobile Association, Inc., of Nashville, with a plan for legal medical and mechanical assistance to automobile owners which involves the listing of approved garages, attorneys and physicians. His "sales activities" were described in the Organization Section of THE JOURNAL, January 16, page 248, and it is to this notice that Craven's apprehension is attributed. Dr. Davis W. Goldstein, Fort Smith, called the secretary of the Arkansas Medical Society, Dr. William R. Brooksher, Fort Smith, who notified the sheriff. The Cooperative Automobile Association, Inc., of Nashville, is not licensed to do insurance business in either Tennessee or Arkansas and is not authorized to do business in Arkansas as a service corporation. Craven and his wife were charged with bringing a stolen car into Fort Smith and with attempting to obtain money under false pretenses from physicians in the community, newspapers reported. He declared that he was willing to be committed to Tucker prison farm so that he could continue his study of criminology. In referring to his insurance scheme, Craven explained that he selected his prospects carefully, preferring doctors and lawyers. He said it was interesting to see how the public can be fooled and how many people get taken in on schemes. He admitted having collected about $500 in this "racket."

CALIFORNIA

Bills Introduced.—A. 1640 proposes to repeal the act for the regulation and control of corporations organized for the purpose of operating nonprofit hospital service plans, approved July 5, 1935. A. 1132 and A. 1641 propose to regulate and control corporations organized for the purpose of operating nonprofit hospital service plans and hospitals rendering services under any such hospital service plans. S. 605 and A. 1491 propose to authorize the organization of medical service associations, to regulate their operation and to invest the commissioner of insurance with supervisory and regulatory power over them. The bills propose to authorize such associations to enter into "medical service contracts" with subscribers, which contracts are defined by the bill as agreements "to provide to the beneficiary named therein, in consideration of a sum certain, the professional services of physicians and surgeons for a specified period in the event that the beneficiary is in need thereof." A. 1283 proposes to authorize persons or associations to engage

in the business of insurance against the need for medical and hospital services and to regulate the manner in which such business is conducted. The bill states that it "is intended to govern all contracts between physicians and surgeons and other persons, which provide that for certain regular sums, or for a stated sum for a stipulated period the physician and surgeon or association of physicians and surgeons will furnish to the other person all medical and surgical services, including hospitalization and nursing, which may be required by such person, irrespective of the actual value of the services furnished." A. 1721 proposes to prohibit the retail sale or other retail distribution of contraceptives and any devices, appliances, or medicinal agents used in the prevention of venereal disease, except by a licensed pharmacist or by a licensed physician or licensed osteopath. A. 1783, to supplement the business and professions code, by the addition of a section 114 to that code, proposes to authorize courts to enjoin (1) the unlicensed practice of any profession or vocation and (2) a licentiate from committing any act the doing of which constitutes a cause for revocation or constitutes unprofessional conduct. A. 1472 proposes to establish a board of naturopathic examiners and to regulate the practice of naturopathy. The bill proposes to define naturopathy as "diagnosis of all human ailments and abnormalities and the practice of physiological and mechanical sciences such as mechano-therapy, electro-therapy, physio-therapy, articular manipulation, hydrotherapy, mineral baths and dietetics, which shall include the use of foods of such chemical tissue-building products and cell salts as are found in the normal body; and the use of oils, dehydrated and pulverized fruits, seeds, barks, non-narcotic herbs, roots and vegetables." A. 1196 proposes to permit the governing authorities of city, county, or city and county hospitals to admit and care for nonindigent patients and to establish rates or fees to be charged such nonindigent patients for services rendered and supplies furnished. S. 781 and S. 783 propose to authorize courts to restrain the unlicensed practice of medicine or of osteopathy. A. 2029, to amend the workmen's compensation act, proposes to make silicosis, asbestosis and pneumoconiosis compensable under certain conditions. A. 1880 proposes to authorize city and county boards of education to grant health and development certificates to "physicians and surgeons holding certificates issued by the California state board of osteopathic examiners." The present law permits the issuance of such certificates only to holders of certificates to practice medicine and surgery issued by the board of medical examiners. S. 731, to amend the medical practice act, proposes to include as unprofessional conduct, which is a cause for the revocation of a license, "advertising or holding out to the public that professional services of a specified nature will be rendered for a particular, definite or fixed price." A. 2011, to amend the workmen's compensation act, proposes to permit an injured worker to "select any person licensed to render the type of treatment or service required." A. 1320, to amend the medical practice act, proposes to designate as unprofessional conduct, which is a ground for revoking a license, "the actual practicing of any system or mode of treating the sick or afflicted which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public moral[s] or safety." A. 1333 proposes to prohibit the manufacture, or sale or offering for sale of any adulterated, mislabeled or misbranded cosmetics. The term cosmetic is to apply to all "substances and preparations intended for external or oral use in cleansing, or altering the appearance of, or promoting the attractiveness of, the person." A cosmetic will be deemed adulterated if its standard of purity, strength or quality fall below the standards provided by the state board of health or if its purity, strength or quality fall below the professed standard of purity, strength or quality under which it is sold or if it contains any poisonous or deleterious substance in such quantity as may render it injurious to the user under the conditions of use prescribed in the labeling thereof, or under such conditions of use as are customary or usual. A cosmetic will be deemed mislabeled or misbranded if its package or label bears any statement which is false or misleading in any particular whatsoever or if the efficacy of the article or its ingredients are falsely or deceptively advertised. A. 1253, to amend the act prohibiting the manufacture, sale or transportation of adulterated, mislabeled or misbranded drugs, proposes to define "drug" so as to include (1) devices intended to be used for the cure, mitigation or prevention of disease and (2) all chemicals or substances of whatever nature used in the treatment of obesity. The bill proposes that the standard of purity of drugs not listed in the United States Pharmacopeia or in the National Formulary shall be the standard of strength, quality or purity established by the state board of health. A drug is to be deemed to be mislabeled or misbranded if advertising matter used in connection with its sale contains any statement regarding its curative or therapeutic effect that is false and fraudulent. The bill further proposes to prohibit the advertisement of drugs, treatments or cures for venereal diseases, impotence, self abuse, cancer, tuberculosis, diabetes or heart trouble, except such advertisements as are disseminated to the medical and pharmaceutical professions. A. 1089 proposes to require the state board of health to establish and maintain a bureau of venereal diseases to cooperate with physicians and surgeons, medical schools, hospitals, dispensaries, clinics, schools, penal and charitable institutions, local health officers and boards, and federal health authorities in the control, prevention and cure of venereal diseases.

COLORADO

Bill Introduced.—H. 364, to amend the law prohibiting the production, manufacture, possession or distribution of marihuana, proposes to make a violation of the provisions of the act punishable by imprisonment in the state penitentiary for not less than one nor more than ten years.

Annual Registration Due Before March 1.—Every person licensed to practice any form of the healing art in Colorado is required by law to register annually before March 1, with the secretary-treasurer of the Board of Medical Examiners, and to pay a fee of $2, if a resident of Colorado, or $10, if a nonresident. Failure to pay this fee within the time stated automatically suspends the right of a licentiate to practice while delinquent. If he nevertheless continues to practice, he is subject to the penalties provided by law for practicing medicine without a license. Failure to pay this fee for three consecutive years results in the automatic cancellation of a delinquent practitioner's license to practice.

Dr. Hall Honored.—Dr. Josiah N. Hall, professor of medicine, emeritus, University of Colorado School of Medicine, Denver, will be guest of honor at a testimonial dinner given February 20 by Dr. Hubert Work, formerly Secretary of the Interior. Dr. Hall has recently announced that he will retire from active practice March 1. He is 77 years of age. A native of Chelsea, Mass., Dr. Hall graduated from Harvard University Medical School in 1882. The following year he began practice in Sterling, remaining there until 1892. He has been in Denver since that time. He was major and surgeon in the medical reserve corps of the U. S. Army in 1917, and chief of medical service, Base Hospital, Camp Logan, Texas. Later he served as consultant in internal medicine to the sixteen southwestern military hospitals during the war. Organizations of which he has been president include the Colorado State Board of Medical Examiners, 1891; the state board of health, 1903-1904; state medical society, 1900, and the American Therapeutic Society, 1916-1917. He was mayor of Sterling, 1888-1889. He served on the Judicial Council of the American Medical Association from 1921 to 1931 and was a member of the House of Delegates at various times from 1903 to 1921. He wrote the section on Gun-Shot Wounds, Burns and Scalds in Peterson and Haines' A Text-Book of Legal Medicine and Toxicology, 1903, and is the author of Borderline Diseases, 1915. In 1933 the Medical Society of the City and County of Denver held a dinner to observe his completion of fifty years in the practice of medicine in Colorado. Tribute was paid to Dr. Hall in 1936 at the annual meeting of the state medical society when the banquet and president's reception was dedicated to him in recognition of his fiftieth year of attendance at the annual sessions of the society.

CONNECTICUT

Bills Introduced.—S. 425 and H. 629, to amend the law regulating the conduct of maternity hospitals, proposes that such hospitals be licensed by the state department of health rather than by the appropriate local health officer, as the present law provides. S. 419 proposes to appropriate $100,000 to the state department of health to be used for the treatment of indigent typhoid and paratyphoid germ carriers. S. 373 proposes to require the governor to appoint a commission, to consist of five members, to investigate the subject of social health insurance and to report its findings, with recommendations for legislation, to the next session of the general assembly. H. 773 and S. 565, to amend the workmen's compensation act, propose to limit the liability of an employer to furnish "medical and surgical aid or hospital service" to an injured employee to the first sixty days after an industrial injury. S. 800 proposes to add $2 to each annual motor vehicle registration fee to create a state fund with which to pay for medical expenses rendered to indigent residents of Connecticut injured in a motor vehicle accident occurring on the highways of the state. S. 1027 proposes that in the distribution of a decedent's estate the claims of

physicians and surgeons for services rendered during the last sickness shall be given priority over all other claims, except expenses of settling the estate and funeral expenses. S. 1069 proposes a procedure whereby hospitals may be reimbursed for the care and treatment rendered indigent persons injured in automobile accidents. The reimbursement, however, is to be limited to $6 for each day of care rendered each indigent patient. H. 640 proposes to require every physician having knowledge of any person suffering from poisoning from lead, phosphorus, arsenic, brass, wood alcohol or mercury, or from anthrax or compressed air illness or any other disease contracted as a result of employment, to report the facts within forty-eight hours after obtaining such knowledge to the state department of health. The bill proposes also that a physician making such a report shall receive a fee of 50 cents from the state department of health.

DELAWARE

Bill Introduced.—H. 88, to amend the workmen's compensation act, proposes to make compensable "such disease or infection as naturally results directly" from employment.

DISTRICT OF COLUMBIA

Medical Bills in Congress.—*Changes in Status:* S. 84 and S. 989 have passed the Senate, proposing, respectively, to provide for the issuance of a license to practice the healing art in the District of Columbia to Dr. Ralph Charles Stuart and Dr. Clarence Quinton Pair.

GEORGIA

Bills Introduced.—H. 186 proposes to repeal the existing workmen's compensation act and enact in its stead a new workmen's compensation act. The bill proposes to make compensable not only injuries arising out of and in the course of an employment but also such diseases as can be attributed to the employment. The employer is to furnish such medical, surgical and other attendance or remedial treatment, nursing and hospital service for such period as the nature of the injury or the process of recovery may require. The employee is to be permitted to select his own physician only in the event that the employer fails to provide one. H. 250 proposes to authorize the formation of nonprofit corporations to furnish group hospitalization service to members of subscribers through such hospitals as may be approved by the state board of health, the medical association of Georgia and the Georgia hospital association. The bill proposes to authorize the insurance commissioner to regulate and supervise such corporations and their contracts. Such corporations are not to contract to furnish to their subscribers physicians or any medical services nor to practice medicine in any manner, nor are such corporations to control or attempt to control the relations existing between a member or subscriber and his physician, but such corporations must confine their activities to rendering hospital service only.

IDAHO

Bill Passed.—H. 123 has passed the house proposing, as a condition precedent to the issuance of a license to marry, that both parties to the proposed marriage present the certificate of a duly licensed physician, dated within ten days prior to the application for a license to marry, showing that each party is free from venereal disease in a contagious stage and is not afflicted with feeblemindedness or insanity. The bill moreover proposes to limit the fee a physician may charge for executing such a certificate to $1, including the examination on which the certificate would be based.

Lectures for Practicing Physicians.—A group of lectures for physicians in six towns was presented recently under the auspices of the Idaho State Medical Association by Drs. Arthur F. Abt and Garwood C. Richardson and Arthur I. Kendall, Ph.D., all of the faculty of Northwestern University School of Medicine, Chicago. The towns were Pocatello, Twin Falls, Boise, Lewiston, Moscow and Coeur d'Alene. In each town the visiting lecturers addressed one or two meetings for physicians, as time permitted, and one meeting for the public. Dr. Abt's technical lectures were on "Prophylaxis and Treatment of Contagious Disease" and "Mortality and Care of the New-Born." Dr. Richardson spoke on "Infections in Pregnancy and the Puerperium" and "Operative Obstetrics"; Dr. Kendall on "Filtrable Viruses," "Intestinal Bacteria," and "Immunization Against Scarlet Fever." Subjects of the public lectures were:

Dr. Abt, Care of the Infant and Child.
Dr. Richardson, Prevention of Maternal Mortality.
Dr. Kendall, Conquest of Disease in the Tropics, and How Colonel Gorgas Cleaned Up Panama.

ILLINOIS

Bills Introduced.—S. 8 proposes to grant to physicians and hospitals, treating persons injured through the negligence of others, liens on all claims, verdicts, judgments or decrees accruing to such persons by reason of their injuries. H. 21 proposes to authorize the sexual sterilization of persons convicted of forcible rape, incest, sodomy or taking indecent liberties with children. The bill also provides that nothing therein contained is to be construed to authorize the operation of castration or the removal of sound organs. H. 95 proposes to authorize the emasculation of persons convicted of the crime of rape, incest, taking indecent liberties with children, sodomy or the crime against nature. H. 97 proposes to appropriate $200,000 for the purchase of radium and radium equipment for the research and educational hospitals in Chicago.

Society News.—Dr. Ralph C. Hamill, Chicago, was reelected president of the Illinois Society for Mental Hygiene at its annual meeting, January 21.——Dr. Ralph B. Bettman, Chicago, addressed the Whiteside County Medical Society at Sterling, January 18, on "Surgical Treatment of Empyema of the Chest."——At a meeting of the Will-Grundy County Medical Society at Joliet, January 20, Dr. Milton Mandel, Chicago, spoke on pneumonia.——The La Salle County Medical Society was addressed, January 21, by Drs. Robert S. Berghoff and Eustace L. Benjamin, Chicago, on heart disease and pathology of the common lesions of the heart, respectively. In the afternoon Dr. Berghoff conducted a heart clinic.——Dr. Daniel L. Sexton, St. Louis, addressed the Madison County Medical Society, Madison, January 8, on "Endocrinology in General Practice."——Dr. Mark T. Goldstine, Chicago, addressed the Peoria City Medical Society, Febrary 2, on "Pelvic Infections."——At a meeting of the Christian County Medical Society in Taylorville, January 27, Dr. Earl O. Latimer, Chicago, spoke on "Abdominal Pain from a Surgical Standpoint."

Chicago

Discussion on Syphilis.—The Chicago Medical Society devoted its meeting, February 3, to a discussion on syphilis with the following speakers:

Dr. Benjamin Barker Beeson, The History of Syphilis.
Dr. Frank J. Jirka, state director of health, The General Picture of Syphilis.
Dr. Guy Howard Gowen, Springfield, Ill., assistant epidemiologist, state department of health, Epidemiology.
H. J. Shaughnessy, Ph.D., chief of laboratories of the state department, Springfield, Wassermann Test and Its Interpretation.
Dr. Francis J. Gerty, Syphilis and Insanity.

Joint Orthopedic and Roentgen Meeting.—The Chicago Orthopedic Society and the Chicago Roentgen Society held a joint meeting at the Palmer House, February 15, with the following speakers: Drs. John A. Siegling, "Studies on the Development and Growth of the Epiphyses of the Long Bones"; John D. Camp, Rochester, Minn., "Roentgenologic Observations Concerning Intraspinal Protrusion of the Intervertebral Disk in Patients with Sciatic and Low Back Pain," and Myron O. Henry, Minneapolis, "Chip Grafts in Orthopedic Surgery."

American Medical Association Night.—The Chicago Medical Society designated its meeting, February 17, "American Medical Association Night." The guests of honor included Dr. John H. J. Upham, Columbus, Ohio, President-Elect, and the following past presidents: Drs. William Allen Pusey, Arthur Dean Bevan, Chicago, and Walter L. Bierring, Des Moines. The speakers included Dr. Olin West, Secretary and General Manager of the Association; Dr. Austin A. Hayden, Secretary of the Board of Trustees; Dr. Edward H. Cary, Dallas, Texas, chairman, Committee on Legislative Activities; Dr. Charles Gordon Heyd, New York, President, and Dr. Morris Fishbein, Editor of THE JOURNAL.

IOWA

Bills Introduced.—S. 31, to amend the laws relating to the election and term of office of boards of trustees of city hospitals, proposes that none of the members of such boards may be physicians or licensed practitioners. H. 117, to amend the workmen's compensation act, proposes to require an employer, with notice or knowledge of an industrial injury, to furnish to the injured employee reasonable surgical, medical, nursing and hospital services, or any other appropriate treatment without limit as to time or amount. Under the present law the employer's liability to furnish such services and treatment is limited in time to the first four weeks of incapacity of the employee and in amount to $100. H. 124 proposes to authorize the formation of corporations to operate nonprofit hospital service plans whereby hospital care may be provided by the corporation, or by any hospital, to such of the public as become

subscribers to the said plan under a contract which entitles each subscriber to certain hospital care in the event of sickness. H. 129 proposes that coroners be duly qualified licensed physicians.

KANSAS

Course on Neuropsychiatry.—The third annual graduate course on neuropsychiatry in general practice, conducted by the staff of the Menninger Clinic, Topeka, will be held April 19-24. This year the course will include a brief introduction to the fields of neurology and psychiatry and a specific application of this knowledge to the large group of cases of psychoneuroses, psychoses and psychogenic and neurologic disorders which the physician meets in everyday practice.

Bills Introduced.—H. 256 proposes to create a state pedopractic board of examiners and to regulate the practice of pedopractic. Pedopractic is defined by the bill as "the diagnosis and treatment of all illnesses of the human foot." H. 162, to amend the workmen's compensation act, proposes to make compensable any injury or disease which arises out of or in the course of any employment. H. 226 proposes that all applicants for licenses to practice any form of the healing art, as a condition precedent to their right to present themselves to their respective professional boards for examination and licensure, must pass examinations in anatomy, physiology, chemistry, bacteriology and pathology, to be given under the direction of the state board of education. To aid it in conducting these examinations the state board of education is to be empowered to employ professors, associate professors or assistant professors from the science departments of accredited colleges and universities of the state, provided, however, that no such person may be selected from the University of Kansas or its School of Medicine or be a practitioner of any healing profession.

MARYLAND

Bills Introduced. — S. 61 proposes to grant to hospitals, treating persons injured through the negligence of others, liens on all claims, rights of action, compromises, and judgments accruing to the injured persons because of their injuries. H. 137 proposes to empower equity courts to authorize the sexual sterilization of incurable idiots, imbeciles or morons, residents of the state whether inmates of state institutions or not.

Dr. Eagle Awarded Prize.—Dr. Harry S. Eagle, passed assistant surgeon, U. S. Public Health Service, at present stationed at Johns Hopkins Hospital and lecturer in medicine at the Johns Hopkins University School of Medicine, Baltimore, has received the Alvarenga Prize for 1936 of the College of Physicians of Philadelphia, for his essay on "The Present Status of the Blood Coagulation Problem." Dr. Eagle graduated from Johns Hopkins University School of Medicine in 1927. Until recently he was assistant professor of bacteriology at the University of Pennsylvania School of Medicine. At the annual meeting of the Society of American Bacteriologists in Indianapolis, Dec. 29, 1936, Dr. Eagle was presented with the $1,000 prize and gold medal of Eli Lilly and Company, for accomplishments in research on various diseases, notably syphilis. The Alvarenga Prize was established through a legacy received by the College of Physicians of Philadelphia in 1888 from the late Pedro Francesco da Costa Alvarenga, Lisbon, Portugal, an associate fellow of the college. The interest from this fund constitutes a prize which is given to the author of the best unpublished, competitive essay on any subject in medicine.

MASSACHUSETTS

Bills Introduced.—H. 1489 proposes a system of compulsory and voluntary sickness insurance, whose benefits are to consist of cash and all forms of medical and dental services. Persons employed at "other than manual labor" and receiving wages in excess of $60 a week, farm laborers and persons employed by an employer having less than three employees in personal or domestic services, are to be excluded from the compulsory insurance of the bill but are to be entitled to participate in the voluntary insurance. This bill appears to be identical with the so-called Epstein bill, prepared by the American Association for Social Security, Abraham Epstein, secretary. H. 1163 proposes to establish a board of magnetic healers examination and registration and to regulate the practice of magnetic healing. The bill proposes that "the system, method or science commonly known as magnetic healers [sic], or the practice of magnetic healing, is defined to be the science of reviving and producing life and circulation in the nerve system and cells, so as to heal all nerve affections." Apparently no educational requirements whatever are to be exacted of applicants for such a license and an applicant need only to show that he is 21 years of age and "capable of examining nerve conditions by his magnetic power." H. 1200, appendix XXXV, proposes to prohibit the retail sale of barbituric acid or of dinitrophenol except on the written prescription of a physician. H. 1200, appendix L, proposes to prohibit the establishment, maintenance or operation of hospitals except by virtue of an annual license issued by the department of public health. No such license will be issued by the department unless the appropriate local board of health shall have first certified to the department that the hospital is approved as to location and equipment by such board. The department is to have supervision of all such hospitals and is authorized to make necessary rules for their regulation. H. 1200, appendix LI, proposes to prohibit the establishment, maintenance or operation of nursing homes except by virtue of a license issued by the department of public health. No such license will be issued by the department unless the local board of health shall have first certified to the department that the nursing home in question is approved as to location and equipment by such board of health. H. 1200, appendix LV, authorizes the admission of inebriates and drug addicts to institutions under the supervision of the department of mental diseases. H. 1200, appendix LVI, proposes to establish a commission of five members, to be appointed by the governor, to investigate and study all aspects of occupational diseases and any methods or ways or means of reducing or controlling the hazard or the likelihood of contracting occupational diseases.

MICHIGAN

Bill Introduced.—H. 127, to amend the workmen's compensation act, proposes, in effect, to make compensable "any disease . . . proximately caused by and arising out of and in the course of" employment.

Dr. Edmunds Chosen Russell Lecturer.—Dr. Charles W. Edmunds, professor of materia medica and therapeutics, University of Michigan Medical School, Ann Arbor, has been selected to give the Russell Lecture for 1937 at the university. The lectureship is awarded annually to a member of the faculty of the University of Michigan who has distinguished himself by outstanding scholarship. Dr. Edmunds is the twelfth lecturer and the fourth to be chosen from the medical faculty. The lecture will be given sometime in the spring and the subject one related to Dr. Edmunds' specialty.

MINNESOTA

Bill Introduced.—S. 479, to amend the chiropractic practice act, proposes to make the annual renewal of a license to practice chiropractic contingent on the attendance of the licentiate during the preceding year at "at least one of the two-day educational programs as conducted by the Minnesota American Chiropractic Association, Inc., the subjects of such programs being under the supervision of the State Board of Chiropractic Examiners."

MISSOURI

Bill Introduced. — H. 188, to supplement the osteopathic practice act, proposes to require licensed osteopaths to register annually and to pay annual renewal fees of $2.

New State Health Commissioner. — Dr. Harry Field Parker, Warrensburg, has been appointed health commissioner of Missouri, succeeding Dr. Elmer T. McGaugh. Dr. Herman S. Gove, Linn, has been serving as temporary health officer since Dr. McGaugh's resignation. Dr. Parker graduated from Washington University School of Medicine, St. Louis, in 1906.

Operative Clinics.—The Kansas City Southwest Clinical Society announces the inauguration of operative clinics each Tuesday morning at the Allied Hospitals of Greater Kansas City. Tuesday was selected to afford visiting physicians the opportunity to attend that evening the meeting of either the Jackson County or the Wyandotte County Medical Society.

Dr. Yancey Retires as Medical Director of Railway.—Dr. Edwin F. Yancey, Sedalia, has retired as medical director of the Missouri-Kansas-Texas Railroad Company, effective February 1, it is reported. Dr. Yancey has served continuously with the company since 1885, taking over the duties of chief surgeon on Jan. 1, 1891. A native of Missouri, Dr. Yancey is 78 years of age. He graduated from Missouri Medical College in 1882.

Joint Meeting on Gynecology.—The St. Louis Gynecological Society and the Chicago Gynecological Society held a joint meeting in St. Louis, February 13. Dr. Joseph L. Baer, Chicago, discussed "Selective Treatment of Prolapse of the

Uterus"; Noble Sproat Heaney, Chicago, "Operative Indication in Gynecology," and William C. Danforth, Evanston, Ill., "Management of Breech Presentation." Clinical programs were conducted at the Firmin Desloge and St. Louis Maternity hospitals.

NEBRASKA

Bill Introduced.—H. 135 proposes to legalize, under conditions stated in the bill, the administration of euthanasia to persons desiring it and who are suffering from illness of a fatal and incurable character involving severe pain.

NEW HAMPSHIRE

Bill Introduced.—H. 277 proposes that no license to marry shall issue until both parties to the proposed marriage present to the appropriate town clerk a statement signed by a licensed physician that each party has submitted to a Wassermann or Kahn or other similar standard laboratory test and that, in the opinion of the physician, neither party is infected with syphilis or gonorrhea in a stage that may become communicable.

NEW MEXICO

Hospital to Be Opened in Taos.—Mabel Dodge Luhan, Taos writer, has deeded to the Sisters of the Holy Family of Nazareth an $80,000 house for a hospital. The building, a two-story dwelling with six acres of ground, has been remodeled to accommodate twenty-five patients, with some private rooms, a men's ward and a women's ward. There will be an operating room, x-ray facilities, delivery room and nurses' quarters. The new hospital was to be dedicated January 30 with the name Holy Cross Hospital. Drs. Ashley Pond III, Gertrude U. Light and Warner A. Onstine, all of Taos, make up the medical board.

Bills Introduced.—H. 40 proposes to repeal the present workmen's compensation act and to enact in its stead a law creating a state compensation fund to insure employers against liability for compensation and to assure injured workmen of obtaining the compensation to which they are entitled. Workmen, apparently, are to receive compensation only for injuries received in the course of their employment and are to receive such medical, surgical and hospital or other treatment, nursing services, medicines and surgical supplies as may be reasonably required at the time of the injury and within ninety days thereafter, which term may be extended to one year by the industrial commission. S. 70 proposes to create a state department of public health, to consist of the state board of public health, a director of public health, and such other subordinate officers and employees as are authorized. The department is to be responsible for the administration of the public health activities of the state. The state board of health is to consist of five members appointed by the governor and is to formulate all policies, rules and regulations for the conduct of the department's affairs. The director of public health is to be appointed by the board and is to be the administrative head of the department. H. 69 proposes to provide for the hospitalization and treatment of indigent tuberculous persons in hospitals throughout the state having beds available for the hospitalization and medical care of patients suffering from pulmonary tuberculosis and acceptable to the director of public health. The state will pay such hospitals for the care and treatment given accepted patients at the rate of $2.50 per patient daily.

NEW YORK

Award for Research in Ophthalmology.—The University of Buffalo annually awards a gold medal to the author of some work in ophthalmology. Details can be obtained from Dr. Harold W. Cowper, 543 Franklin Street, Buffalo.

Bills Introduced.—S. 481, to amend the pharmacy practice act, proposes to make the provisions of the pharmacy practice act applicable to the sale of proprietary medicines. A. 581 proposes to make it unlawful for any person to grow or permit to be grown on any land any marihuana except as permitted by the bill. The bill authorizes the commissioner of agriculture and market to license persons to grow marihuana on designated land, provided the marihuana is to be used in the manufacture of a commercial product. A. 804 proposes to prohibit a person from practicing as a clinical laboratory technician unless licensed by the education department. The bill defines "clinical laboratory technicians" as "any person who performs any technical laboratory procedures, including bacteriology, bio-chemistry, hematology, clinical pathology, immunology, parasitology, histology or tissue technic, or basal metabolism, which are used for the purposes of diagnosing, investigating or treating any disease, illness or infection."

New York City

Laboratory of Industrial Hygiene.—A laboratory to carry on scientific and industrial work in chemical, bacteriologic and public health problems was recently incorporated under the name "Laboratory of Industrial Hygiene." The officers are Dr. William H. Park, president; Kaufman George Falk, Ph.D., vice president, and Miss Grace McGuire, secretary. The service at present includes units for certified milk, vitamin testing, clinical diagnosis, chemistry and bacteriology.

Dr. Chapin Honored.—Dr. Henry Dwight Chapin, professor emeritus of pediatrics at the New York Post-Graduate Medical School and Hospital, was the guest of honor at the annual dinner of the Faculty Association of the school, January 23, at the Hotel Biltmore. The occasion celebrated the fiftieth anniversary of Dr. Chapin's appointment as professor of pediatrics and his eightieth birthday, which was February 4. The speakers at the dinner included Drs. Arthur F. Chace, president of the board of directors; Frederic E. Sondern, former president of the Medical Society of the State of New York; Adolph G. G. De Sanctis, president, and Walter T. Dannreuther, former president, of the Medical Society of the County of New York, and Charles Gordon Heyd, President of the American Medical Association. The faculty association presented to Dr. Chapin a silver loving cup. A native of Ohio, Dr. Chapin graduated from Columbia University College of Physicians and Surgeons in 1881. He is the founder of the Speedwell Society, an organization that has fostered the plan of caring for orphan children in small groups as distinct from the mass care in large institutions. With Mrs. Chapin he also founded the Chapin Adoption Nursery in their New York home. He is a charter member of the American Pediatric Society, of which he was president in 1910. He has been active in many social welfare organizations in New York and in 1933 received a medal from Columbia University "for outstanding contributions to problems relating to the care of children and as a pioneer in hospital social service." He retired from his professorship in 1920. He is the author of numerous books and other contributions relating to pediatrics.

NORTH DAKOTA

Society News.—The Northwest District Medical Society met in Minot recently; Dr. Arthur C. Kerkhof, Minneapolis, spoke on "Gastric Malignancy, Including Gastroscopy and Supervoltage Therapy."

Personal.—Dr. John F. Regan, assistant superintendent of the North Dakota Hospital for the Insane, Jamestown, has resigned to become assistant superintendent of the State Hospital for Mental Diseases, Howard, R. I.

Bills Introduced.—H. 103 proposes to require the secretary of every board authorized to license persons to practice any profession in the future to file with the secretary of state a certified list of the persons to whom licenses have been issued within thirty days after the issuance of such licenses. H. 161, to amend the medical practice act, proposes to make the failure of a licentiate to pay the required annual registration fee a misdemeanor punishable by a fine of not less than $50 nor more than $500, or by imprisonment in the county jail for not exceeding one year, or both. Under the present law a licensed practitioner who fails to register annually within the required time may have his license revoked but such license may be restored on the payment of the delinquent fee and such additional fee, not to exceed $9, as the board of medical examiners may determine. The bill also proposes that any person convicted for a second time of violating any provisions of the medical practice act shall be guilty of a felony.

OKLAHOMA

Bills Introduced.—S. 155 proposes to repeal the present chiropractic practice act and to enact a new act in its stead. The bill proposes to define chiropractic as "a system of adjustment consisting of Palpation, Spinograph or method to ascertain vertebral subluxations of the Spinal Column, followed by the adjustment of them by hand alone in order to relieve interference with the normal nerve force from the brain to the rest of the body." An applicant to receive a license to practice chiropractic must be 21 years of age, of good moral character, must possess preliminary education equivalent to a high school education, be a graduate of a chiropractic school or college teaching chiropractic and giving a course of instruction of at least three terms of six months each in anatomy, physiology, symptomatology, hygiene and sanitation, chiropractic analysis, chiropractic principles and practices, physical chemistry, histology, pathology, spinography, orthopedia and public health

service, and pass examinations to be conducted by the board. A chiropractor may not designate himself as a physician or surgeon but may use the prefix "Doctor" before his name, provided his name is followed by the word "Chiropractor." S. 160 provides for the prevention, treatment, cure and control of venereal diseases. It proposes (1) to prohibit the employment of any person handling food products or drinks unless such person is free from venereal disease; (2) to make it a felony for a person infected with a venereal disease in a contagious form to marry or to expose any other person by the act of copulation to such venereal disease; and (3) to make it a condition precedent to the issue of marriage license for both parties to the proposed marriage to present a physician's certificate that the parties are not infected with any venereal disease in a contagious form. A physician examining any person for a venereal disease must charge a reasonable fee therefor, one dollar of which is to be set aside in the county treasury of the county in which the examination was made, in a special fund to be used for the enforcement of the act. The bill also proposes that any person not a licensed physician who undertakes for pay to treat or cure any person infected with venereal disease shall be guilty of a felony. S. 190, to amend the chiropractic practice act, proposes, among other things, to define "chiropractic" as "a system of adjustment consisting of Palpation, Radiograph or other Method to ascertain Vertebral Subluxations of the Spinal Column, or the Articulations of the Skeletal frame, followed by the adjustment of them by Hand alone in order to relieve interference with the normal Nerve Force from the Brain to the rest of the body. This definition is inclusive and any and all other methods are hereby declared not to be Chiropractic." H. 270, to amend the medical practice act, proposes that (1) the governor appoint the seven members of the board of medical examiners from the schools of practice commonly known as the regular, the eclectic, the homeopathic and the physio-medic schools and that at no time shall there be a majority of one school represented on said board; (2) the license of a physician cannot be revoked before a trial of charges by the board of medical examiners nor before the decision of the board of medical examiners becomes final; (3) in revocation proceedings, failure of the accused physician to file a written answer with the secretary of the board within twenty days after the services of charges on him shall work a revocation of his license; (4) the term "cappers and steerers," the employment of whom by a licentiate is unprofessional conduct and grounds for the revocation of a license, shall not be construed to apply to persons soliciting contracts for professional, surgical, medical or hospital services to be rendered in the future on behalf of organized groups, hospitals, clinics or cooperative organizations, and (5) appeals from orders of the board of medical examiners revoking or suspending licenses be taken, not directly to the supreme court as the present law provides, but to the district court of the county in which the accused resides or to the district court of the county in which the hearing on the revocation proceedings was had, and that on such appeal to the district court the matter be tried de novo by a jury.

OREGON

Bills Introduced.—H. 143 proposes that in any action in which the mental or physical condition of a party is involved, the trial court may order him to submit to an examination as to his physical or mental condition. S. 182 proposes that before any state-aided home or institution, caring for venereally infected children under 21, can receive any state aid, said home or institution must first obtain a license from the state child welfare commission. H. 243, to amend the law relating to examinations in the five fundamental sciences required of all applicants to practice any form of the healing art as a condition precedent to their right to present themselves for examination and licensure by their respective professional boards, proposes that it shall not be necessary for an applicant to secure a passing grade in all of the required subjects in any one session of examinations held by a state board of higher education. The bill proposes that any applicant who obtains a passing grade of 75 per cent in each of three or more of the required subjects in any session of examinations shall thereafter be examined only in the subjects in which he failed. H. 272 proposes that when any clinic, institute, or any group or combination of persons practice the healing art and use an assumed name, or "clinic," "institute," "specialist" or other title, there shall be likewise added after such title on any written or printed material, or in connection with any advertising, the names and correct designations of the persons connected with the group. H. 352 proposes to make it a misdemeanor for a hospital, exempt from taxation, to deny the use of its facilities to any reputable or qualified licensed physician, solely on the ground that such physician is not a member of a local, state or national medical society or association, or to refuse to make such facilities available to such physician on the same basis as they are used or made available for the use of physicians who are members of any local, state or national society or association.

Bill Passed.—H. 246, to amend the medical practice act, has passed the house. It proposes (1) to authorize the board of examiners to maintain a suit for an injunction against any unlicensed person practicing medicine; (2) to make it the duty of every licensed physician to display his certificate of annual registration in some conspicuous place in his office; (3) that if a licentiate fails to pay his annual registration fee his license shall be revoked by the board on twenty days' notice given him of the time and place of considering such revocation, and that no license shall be revoked for such nonpayment if the licentiate so notified pays before or at the time of such consideration the fee required and such penalty as may be imposed; and (4) to designate various additional acts as unprofessional conduct, which is a ground for revoking a license, such as employing solicitors, or paying or presenting any person with money or anything of value for the purpose of securing patients; holding oneself out to treat human ailments by making false statements, by specifically designating any disease, or group of diseases and making false claims of one's skill or of the efficacy of one's medicine; advertising in any manner, either in his own name or in the name of another person or clinic or concern, actual or pretended professional superiority to that possessed by fellow physicians, the restoration of lost manhood, the treatment of private diseases peculiar to men or women, or the advertising or holding himself out to the public in any manner as a specialist in the diseases of the sexual organs or the diseases caused by sexual weakness, self abuse or excessive indulgence; and aiding or abetting the practice of any of the healing arts by an unlicensed person.

PENNSYLVANIA

Bills Introduced.—H. 458 proposes to establish a state board of chiropody examiners and to regulate the practice of chiropody. The bill proposes to make "chiropody" and "podiatry" synonymous and proposes that the terms mean "the diagnosis and treatment of the human foot and leg (amputation of the leg, foot or toes excepted), the making of models of the human foot, and the palliative, manipulative, electrical and mechanical treatment of the foot and leg as taught and practiced in the schools or colleges of chiropody recognized by the State Board of Chiropody Examiners." H. 490 proposes to establish in the department of public instruction a board of chiropody examiners, to consist of the superintendent of public instruction, ex officio, and three chiropodists, to be appointed by the governor. H. 622 proposes a system of compulsory and voluntary sickness insurance whose benefits are to consist of cash and all kinds of medical and dental services. All employees are embraced in the compulsory insurance of the bill except farm laborers and personal or domestic servants of an employer having less than three employees engaged in such service, which persons, however, are to be entitled to participate in the voluntary insurance.

RHODE ISLAND

Bill Introduced.—S. 35 proposes to grant to physicians, hospitals, nurses or dentists, treating persons injured through the negligence of others, liens on all claims, judgments or compromises accruing to the injured persons by reason of their injuries.

TEXAS

New State Health Officer.—Dr. George W. Cox, Del Rio, has been named state health officer to succeed Dr. John W. Brown, who has served four years. Dr. Cox is 57 years old and was graduated from Tulane University of Louisiana School of Medicine in 1906.

Society News.—At a meeting of the Dallas County Medical Society, February 11, the speakers were Drs. Elliott Mendenhall, on "Modern Concepts in the Treatment of Tuberculosis"; Alfred I. Folsom and Harold A. O'Brien, "Use of Mandelic Acid in Urinary Infections," and George T. Caldwell, "Systemic Torulosis."

Bills Introduced.—H. 325 proposes to reorganize the executive department of the state government. Among other things, the bill proposes to create in the department of public health a bureau of licensing which is to assume all the functions heretofore vested in the state boards of medical examiners, of nurse examiners, of barber examiners, of chiropody examiners, of dental examiners, of embalming, of pharmacy, and of optometry. The bureau to be created is to be provided with a staff qualified

to specialize in testing technics and, with the advice and cooperation of members of the several professions and occupations involved, to devise and apply the most effective tests and testing procedures. An integrated field force is to cover the state and to make inspections covering all the occupations and professions subject to license by the bureau. S. 128, to amend the medical practice act, proposes to permit "the application or use of the principles, tenets or teachings of any church in the ministration to the sick or suffering by prayer, *with or without compensation*, without the use of any drug or material remedy, provided the sanitary and quarantine laws and regulations are complied with."

UTAH

Bills Introduced.—S. 135, to amend the law prohibiting a physician from being examined in a civil action as to any information acquired by him in attending a patient which was necessary to enable him to prescribe or act for the patient, proposes to permit a physician to testify in probate proceedings concerning the mental condition of his patient. The bill further proposes that (1) where an action is brought for damages on account of the death of a patient, the patient's executor or administrator may consent to the physician's testifying and (2) where the patient brings an action to recover damages for personal injury, such action shall be deemed to constitute a consent by the patient that his physician may testify. H. 156 proposes to authorize the department of registration to license persons "to practice as a naturopathic physician in accordance with the tenets of the professional schools of naturopathy recognized by the department of registration."

WASHINGTON

Bills Introduced.—Senate Memorial No. 9 proposes to memorialize President Roosevelt and the United States Congress to provide for a survey under the supervision of the United States Public Health Service to determine the number of narcotic addicts in this country and to recommend methods of care and treatment of curable addicts and for a plan for dispensing narcotic drugs to incurable addicts. H. 266, to amend the workmen's compensation act, proposes to authorize "any licensed practitioner in the art of healing" to render the medical care and treatment required by the act to be furnished to injured workers. S. 198 proposes to prohibit the retail sale or distribution of appliances, drugs or medicinal preparations intended or having special utility for the prevention of conception or venereal diseases except by licensees of the state board of pharmacy and "medical practitioners regularly licensed to practice in the state of Washington." H. 316, to amend the workmen's compensation act, proposes to make compensable "any and all occupational diseases."

WEST VIRGINIA

Bill Introduced.—H. 188 proposes that applicants for licenses to practice any form of the healing art, as a condition precedent to their right to present themselves for examination to their respective professional boards, must pass examinations in anatomy, physiology, bacteriology, pathology, hygiene and public health, and chemistry, to be given by a board of examiners in the basic sciences. No person may serve as a member of the board who is not a full-time professor, or associate or assistant professor, teaching one or more of the basic sciences, in some university or college in the state accredited by the North Central Association of Secondary Schools of Colleges. No member of the board shall be actively engaged in the practice of healing or licensed to practice healing.

WISCONSIN

Bill Introduced.—A. 29 proposes to repeal the law requiring antenuptial physical examination.

Society News.—Drs. Ernest A. Pohle, Madison, and Merle Q. Howard, Wauwatosa, addressed the Medical Society of Milwaukee County at a joint meeting with the Milwaukee Roentgen Ray Society, January 8, on "The Indications for and the Practical Application of X-Ray Therapy" and "The Suicide Problem" respectively.——Drs. Louis Brachman and Ralph T. Rank addressed the Milwaukee Oto-Ophthalmic Society, January 12, on "Near Vision Problems Confronting the Ophthalmologist" and "Newer Methods of Nasal Therapeutics" respectively.——Dr. Solon Marx White, Minneapolis, addressed the Chippewa County Medical Society, Chippewa Falls, December 8, on "Depression and Increased Irritability in Heart Muscle Function" and "Management of Early Hypertension."

GENERAL

Medical Bills in Congress.—*Change in Status:* S. 5 has been reported to the Senate, with numerous amendments, proposing to prevent the adulteration, misbranding and false advertising of food, drugs, devices and cosmetics. *Bills Introduced:* S. 1233, introduced by Senator Burke, Nebraska, and H. R. 4650, introduced by Representative Drew, Pennsylvania, propose to amend the United States Employees' Compensation Act so as to provide that the term "physician" shall include osteopathic practitioners and that the term "medical, surgical, and hospital services and supplies" shall include services and supplies by osteopathic practitioners and hospitals. S. 1399, introduced by Senator Chavez, New Mexico, proposes to prohibit the transportation of anhalonium, commonly known as peyote, into any state, territory, or possession of the United States, for delivery, possession, sale, or use in any manner, either in the original package or otherwise, in violation of any law of such state, territory, or possession. The bill further provides that all packages containing any anhalonium, when transported in interstate commerce, shall be plainly and clearly marked, so that the name and address of the shipper, the name and address of the consignee, the nature of the contents, and the quantity of anhalonium contained therein may be readily ascertained on an inspection of the outside of such package. H. R. 1810, introduced by Representative Haines, Pennsylvania, proposes to authorize the President to present a medal of honor to Dr. George E. Holtzapple, "who administered oxygen in the treatment of pneumonia for the first time on record, March 6, 1885." H. R. 4475, introduced by Representative Voorhis, California, proposes to increase from $8,000,000 to $20,000,000 the appropriation authorized by the Social Security Act to assist states, counties, health districts, and other political subdivisions of the states in establishing and maintaining adequate public health services. The bill also proposes to increase from $2,000,000 to $5,000,000 the appropriation authorized in the Social Security Act for expenditure by the United States Public Health Service for investigation of disease and problems of sanitation. H. R. 4483, introduced by Representative Rogers, Massachusetts, proposes to authorize an appropriation of $1,400,000 to construct a veterans' hospital and diagnostic center at or near Boston. H. R. 4485, introduced by Representative Green, Florida, proposes to authorize an appropriation of $1,000,000 to construct a marine hospital at Jacksonville. H. R. 4598, introduced by Representative Celler, New York, proposes to make it unlawful to sell certain spirits containing alcohol produced from materials other than cereal grains. H. R. 4602, introduced by Representative McKeough, Illinois, proposes to add the name of Gustaf E. Lambert to those listed in the act recognizing the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever. H. R. 4608, introduced by Delegate King, Hawaii, proposes to authorize an appropriation of $500,000 to erect a veterans' facility in Hawaii. H. R. 4716, introduced by Representative Peterson, Florida, proposes to authorize an appropriation of $1,500,000 to erect a marine hospital in Florida, the site to be selected by the Federal Board of Hospitalization.

Government Services

Dr. McCoy Relieved as Director of National Institute of Health

Dr. George W. McCoy has been relieved as director of the National Institute of Health, effective January 31. Dr. McCoy had held the position since 1915, when the institute was known as the Hygienic Laboratory. A native of Cumberland Valley, Pa., Dr. McCoy is 60 years of age and a graduate of the University of Pennsylvania School of Medicine, class of 1898. He was appointed assistant surgeon of the Public Health and Marine Hospital Service in 1905 and, in 1913, surgeon in the public health service. He was named medical director in the service July 1, 1930. Dr. McCoy was in charge of the U. S. Plague Laboratory, San Francisco, from 1908 to 1911, and director of the U. S. Leprosy Station, 1911-1915, concurrently serving during this period as sanitary adviser to the Hawaiian Government. He was president of the Washington Academy of Sciences in 1935. He has written numerous papers on bacteriology and public health subjects. Dr. McCoy will be assigned to investigations on leprosy, it is reported.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 16, 1937.

Elaborate Preparations Against Attacks with Poison Gas

Britain will soon be the first country in the world to have gas masks available for the whole of the civil population of the capital. Scientific and technical experts have worked out a difficult and new problem: how to produce a simplified and improved gas mask, which can be made by the million by mass production methods. At a factory established by the government the output will soon be half a million masks a week and it is proposed to make 30 million, sufficient for the whole civilian population. The components of a gas mask are a light metal container filled with activated charcoal, several pieces of wire gauze, a thick wad of absorbent cotton, some layers of muslin fabric, metal springs and a rubber mask or face piece into which the container is fixed. The mask fits securely under the chin over the mouth, cheeks and eyes. A cellulose acetate window permits vision. The mask is fixed to the head by easily fitting elastic straps.

At the formal opening of the factory for assembling the containers of gas masks, Mr. Lloyd, parliamentary undersecretary for the Home Department, said that the government considered that in time of war every one ought to have a gas mask, whether he had money to buy it or not. That was the reason why the factory had been established for mass production of gas masks. It was hoped that they never would be needed, but if they were the government would issue them free of charge to every one in danger. The face pieces of the mask, being of rubber, are stored in an inert gas, which will protect the rubber from deterioration for a long time, but there will be periodic tests of the face pieces and containers to ensure that they are in good condition. The charge in the container will last in use against a gas attack from thirty-six to forty-eight hours. Regional depots for gas mask storage are being established.

In the case of an air raid the government considers that the right place for a civilian is indoors in a room in which certain simple precautions have been taken—pasting paper over openings and stopping up cracks with sodden newspaper. Such a refuge room would be the first line of defense. But the government thinks it vital to have a second line of defense, in the shape of the gas mask, for use in case the gas-proof room is damaged, or to enable a person caught outdoors in poison gas to go to a place of safety. Arrangements will be made for any person who wishes to try on the new mask to do so. The masks have been tested and found efficient against every poison gas known to the government. Though vitally important, their provision is only one form of a great national defense against air raids which is being built up all over the country. The local authorities will soon be asking for volunteers to help in air raid precaution organizations.

A census has been taken of the slum property in London where the houses cannot be made gas proof. In the event of an air raid it is proposed to have a voluntary and organized evacuation. This is being worked out with railway companies. By the system of giving warning of air raids, all the country should know in from seven to ten minutes that raiders have passed the coast. Arrangements are being made for getting convalescent cases out of hospitals that are likely to be required for air raid casualties and moving them from the more vulnerable sections of the metropolis to remoter institutions. Consultations are taking place between the government and the authorities of the hospitals. What the government considers an excellent provision has been made by the Westminster Hospital, which is being rebuilt and is in a particularly dangerous position, near the houses of parliament. A covered road will run through the hospital, so that casualty cases can be sheltered at once from further bombing, instead of having to wait outside unprotected. This road will be air locked and have paths communicating direct with the wards, rendering admission of poison gas impossible.

Research on Cancer

The director of the Imperial Cancer Research Fund, Dr. W. E. Gye, has presented in his annual report a review of the present position of cancer research in this country. Interest has now shifted from the study of transplanted tumors to carcinogenesis. Among the influences that can excite cancer formation are ultraviolet radiation, x-rays, radium, purely physical agents, a wide range of chemicals such as arsenic, aniline, tars, dyestuffs, complex hydrocarbons and gross animal parasites. Some of the chemical carcinogenic compounds are of exceptional interest, as their chemical structure is closely related to that of substances, the sterols, which occur in the body. The best known and commonest sterol is cholesterol, a complex alcohol, which occurs in all cells and is a constituent of gallstones. By slight change in the sterol molecule bile acids are produced, and the chemical study of these acids and their derivatives and degradation products has provided a link with cancer-producing hydrocarbons. In 1933 Wieland and Dane obtained from the bile acid deoxycholic acid, a product that has assumed great importance in the study of cancer. It is methylcholanthrene and when painted on mice produces cancer more quickly than any substance known. Its dominant interest is the fact that it is produced from substances always present in the animal body. Moreover, the series of chemical reactions by which it is obtained in the laboratory are of the kind that occur in the body under the influence of cell enzymes. The conception has arisen that normal cells when placed under abnormal conditions produce abnormal derivatives of sterols which are carcinogenic.

Even if this hypothesis should be proved to be true it would not afford a complete explanation of cancer. It is now known that cancer begins as a change in a single normal cell or small group of normal cells, which acquire the power of autonomous growth. In the previous annual report of the fund it was emphasized that numerous experimental observations show that the factors which confer on a cell the property of autonomous growth reside within it and cannot be attributed to agents acting from without, though these may be a remote cause. A list of the remote causes has been given. They prepare the area on which they act for the intrinsic changes of cancer. In other words, they produce a "precancerous" condition.

The Physical Training of Medical Students

Much attention is being given in this country to physical training. Dr. Donaldson has brought forward a scheme for the students of St. Bartholomew's Hospital. In an editorial, *St. Bartholomew's Hospital Gazette* asks: Is the physique of the average medical student bad? And if it is bad, is this due to lack of physical training? The *Gazette* answers thus: The standard is much above the general average, but it lends itself to great improvement. The second question raises more difficult issues. As he advances in his course the medical student has little leisure, much less than that of the average artisan or city worker. A recent investigation shows that the average medical student at the hospital spends only 14 cents on his midday meal. As the majority of students live in inexpensive lodgings where food is often far from being either good or adequate, the *Gazette* asks whether food is not the crucial problem to be settled in any reform of student physique. The proposed scheme of physical training is to be entirely voluntary; any other form would be quite unacceptable. But those most in need of physical culture are those who would not dream of

indulging in it unless compelled to do so. There is the difficulty that daily training cannot be carried out without taking time from the hospital curriculum, which is already so full that it sometimes costs the student his midday meal.

Dr. J. W. McNee Has Gone to Glasgow

Dr. J. W. McNee, physician to University College Hospital, London, and the leading authority in this country on diseases of the liver, has, at the age of 50, been appointed regius professor of medicine in the University of Glasgow. He has followed the example of Dr. J. A. Ryle, who a year ago exchanged the position of physician to Guy's Hospital for that of regius professor of physic in the University of Cambridge. Dr. McNee has abandoned an assured and leading position in London consulting practice. His student career was passed at Glasgow, so that he has returned to his old school. In 1912 he received a Carnegie traveling fellowship and went to Freiburg, where he studied under Professor Aschoff and made his important observation on experimental jaundice in geese, which is the basis of the modern views of the function of the liver and the reticulo-endothelial cells in the formation of bile. In the war he did important work on trench nephritis, the gas bacillus, wound infection and trench fever. For this he received the D.S.O. He is joint author (with Rolleston) of "Diseases of the Liver, Gallbladder and Bile Ducts" and is associate professor of medicine and associate physician of Johns Hopkins University.

PARIS

(From Our Regular Correspondent)

Jan. 21, 1937.

Annual Meeting of International Union Therapeutic Society

The International Union Therapeutic Society held its annual meeting at Paris Oct. 14, 1936. The presiding officer, Prof. Maurice Loeper, who is founder of the society, stated that thirty-four countries were represented. The American guests were Drs. Desjardins and Krusen of the Mayo Clinic.

The first paper was by Mouriquand and Viennois of Paris on cevitamic acid and its therapeutic indications. The action of this acid on vitamin C deficiency is prophylactic in the stage of nonevident dystrophy and curative in the eutrophic stage. Aside from such indications (vitamin C deficiency) cevitamic acid is also useful in hemorrhages of capillary origin, probably because of its aiding the nourishment of the intercellular cement between the endothelial cells of the capillary walls. In certain toxi-infections, such as diphtheria, the toxin of which accelerates the excretion of the cevitamic acid of the adrenals, another indication exists. The general resistance of the organism in septicemias is greatly augmented by cevitamic acid, which seems to act by supporting the cellular oxyreductions that are so greatly altered in septicemia. It seems to be important for the organism that the nervous and reticulo-endothelial systems should conserve their normal cevitamic acid content.

A paper on methods of resuscitation was presented by Cordier of Alfort. Based on experimental work, such as the measurement of pulmonary ventilation and variations of the intracardiac pressure, the Silvester method holds first place among the normal methods of artificial respiration. It must, however, be applied with the subject lying on his back, a fatiguing process for the person who is employing this method, which is still popular in Germany, where it is combined with massage of the heart. The Schafer method ranks very low, if one bases its value solely on the results of experimental work. It is, however, much easier to use than that of Silvester and much less fatiguing for the operator because there is no muscular resistance and the subject lies with the face downward. The feeble action of this method on the ventilation of the lungs and the general circulation can be supplemented by having the arms raised by a second operator, as suggested by Nielsen, synchronously with compression of the lower part of the thorax by the hands of the first operator, who sits astride the lumbar region of the asphyxiated person. The combined Schafer-Nielsen method has all of the advantages of the Silvester method and is easier to apply. If only one person is available to use resuscitation methods the Schafer method should be used, but if there are two persons available the Schafer-Nielsen method is indicated. Friction and the application of heat are of aid only if the encephalobulbar centers are still excitable.

Hyperpyrexia in gonorrheal complications was the subject of the next two papers, one by Charles Richet and Jean Facquet of Paris, the other by Desjardins and Krusen of the Mayo Clinic. In the first paper it was stated that of thirty-three cases of arthritis treated by hyperpyrexia following injection of dead bacteria there were twenty-eight (78 per cent) complete cures. The statement was made that this method acts more rapidly and is followed by fewer complications than any other. This is true for arthritis, orchitis, endometritis and salpingitis, and even in acute gonorrhea in the male.

Desjardins and Krusen described the Kettering hypertherm apparatus, with the aid of which treatments are given at the Mayo Clinic and in many other American hospitals. Bacteriologic studies have shown that in 99 per cent of the laboratory experiments gonococci were killed at a temperature of 41 C. (106 F.) in five hours and at a temperature of 42 C. (107.6 F.) in two hours. At present an internist, a bacteriologist and a pyretotherapist collaborate in every case. A rectal temperature of 41.2-41.7 C. (a little over 106 and about 107 F.) is maintained for a period of between six and seven hours and the sitting is repeated from one to five times at intervals of from two to three days. Ninety-two per cent of 100 cases (male and female) of gonorrhea (with and without complications) were cured during the past two years. The results were especially striking in gonorrheal arthritis.

In a symposium on the treatment of migraine, the first paper, on the endocrine treatment, was read by Prof. Gregorio Marañón of Madrid. Migraine is a syndrome the fundamental element of which is supposed to be a disturbance of the neurovegetative system, which is constitutional and hereditary in the majority of cases. The so-called predisposition to migraine is a vegetative instability, being analogous to the "epileptic predisposition" and also to that of asthma. As in the two last named diseases, the glands of internal secretion play an important part, none however a specific one. A dysfunction of the thyroid can be the underlying factor, or this may be equally true of the ovary, hypophysis, pancreas or other glands of internal secretion. All one can say is that there is a disturbance of equilibrium and not a definite hypofunction or hyperfunction. It is possible by reestablishing a normal hormone state to improve a case of migraine, but the underlying "predisposition" is not cured by such treatment. One ought not to employ the term "endocrine migraines" or speak of "endocrine cures."

The second paper on migraine was read by Professor Parhon of Bucharest, Rumania, and entitled "Rôle of Vascular Spasms and Importance of Antispasmodic Treatment." Parhon also believed that migraine is a constitutional disease, that is, on an endocrine basis, either a hypothyroidism or a hyperparathyroidism being responsible. In the latter, cerebral angiospasms are of much importance. Thyroid and parathyroid opotherapy modify the condition by liberating calcium and acting on the angiospasms. Bromides, phenobarbital, papaverine and the ordinary analgesics act especially on the attacks of migraine. When employed over a prolonged period they seem to have a more or less permanent beneficial effect on cerebral hyperexcitability and tendency to angiospasm and hence on the migraine attacks.

The third paper in the symposium was "Treatment by Humoral Modification," by Pasteur Vallery-Radot, Haguenau and Hamburger, who reported that the attacks are favored by certain humoral modifications that are still but little known. Certain empirical methods seem to be capable of preventing recurrence of attacks and should be used in all cases of undetermined origin, especially those in which there is a concomitant urticaria or an asthma, and when there is a relation between the attacks and a specific hypersensibility to certain foods. The methods mentioned were (*a*) peptone by mouth in doses of 0.5 Gm. one hour before each meal, (*b*) autohemotherapy, (*c*) antirabic virus-vaccine, (*d*) sodium thiosulfate or magnesia, and (*e*) intravenous injections of sodium carbonate, calcium salts or magnesium sulfate.

The fourth paper on migraine was by Professor Aubertin of Bordeaux, on hepatic treatment. During the past fifteen years, functional disturbances of the liver have been of ever increasing importance, in his opinion. In cases of migraine associated with biliary stasis, the attacks are characterized by excessive vomiting of bile, followed a few days later by a slight icterus, urobilinuria and acholic stools. In the intervals between the attacks, one observes symptoms of digestive disturbances in the form of recurrent nausea and slight tenderness over the region of the gallbladder. The most convincing evidence that the migraine is related to biliary stasis is the amelioration following the use of the duodenal tube combined with magnesium sulfate. About 30 per cent of all cases of migraine are benefited by this treatment. If no other cause, and no evidence of hepatic dysfunction can be found for the attacks of migraine, Aubertin advises a prolonged hygienodietetic disintoxication cure and stimulation of hepatic function. Whether this treatment is specific or not, it cannot do any harm and in his experience has greatly benefited 30 per cent of the cases.

BERLIN

(From Our Regular Correspondent)

Jan. 2, 1937.

Pharmaceutic Substances, Therapeutic Plants and Therapy

For years there has existed a continuous fight between the pharmaceutic industry on the one hand and the pharmacists on the other. The latter have sought to maintain a strong position as the sole dispensers of pharmaceutic substances. Yet, owing to the huge number of ready-made substances now on the market, the pharmacist has been shoved further and further into the background. Then too the fact that the sick insurance societies prefer in their practice the prescription of inexpensive ready-made preparations and recommend these products through the official insurance publications has tended progressively to detract from the importance of the pharmacists. With the coming into power of the National Socialists the pharmacists expected the new régime to undertake drastic measures for the amelioration of the situation and to put an end to this perpetual commercial warfare, through which many of their number had been made to feel real economic distress. But of course the legislators had to consider the sick insurance societies, the total expenses of which must of necessity be commensurately increased if more prescriptions of the type to be filled by pharmacists were to be issued. Nevertheless the new governmental supervisors of medicine and pharmacy are accomplishing far more than their predecessors with regard to administering to the needs of the pharmacist. To be at one and the same time equally just to the two sides is a virtual impossibility and hence any change in the status quo tends naturally to be at the expense of the pharmaceutic industry.

This favorable official attitude toward the pharmacists was further expressed during a recent convention of German pharmacists, at which the governmental representative went so far as to speak of the ready-to-use products of pharmaceutic houses as "konfektion." This term, which in the German language denotes ready-made merchandise, also may convey a suggestion of inferiority and the speaker no doubt intended that it should do so on this occasion. From the medical point of view there can be scarcely any question that in many cases the personal written prescription to be filled by the pharmacist has its advantages over the recommendation of a ready-made product, but from the same standpoint it is equally incontestable that in other cases the product of the pharmaceutic industry may be just as efficacious as the substance prepared by a private pharmacist on a physician's prescription and in some instances the ready-made product may even be more reliable. A few days ago a pact was concluded between the two rival groups. Under the terms of this agreement the association of pharmaceutic manufacturers and the German Pharmacists' Association are to organize a permanent joint administrative board. It shall be the duty of this board to work out the solution of particular problems and to adhere to the principle of a friendly interchange of views. It is to be hoped that this arrangement will serve the best interests of all concerned. It is interesting to note in view of this recently effected reconciliation that the pharmaceutic industry has composed a "List of New Pharmaceutic Specialties" in which all new pharmaceutic products placed on the German market will find mention. By "new" specialties is meant actual innovations and not mere imitations of products already manufactured and sold by other firms. Pharmaceutic substances which are permitted to be sold elsewhere than at a pharmacy must bear on the package a notice to that effect. No list of such substances can however be complete, as many products are governed by differing regulations according to the use to which they are put. All special substances free sample packages of which are furnished to physicians must carry the plainly visible legend "Sample. Not to be sold." A plethora of physicians' free samples is likewise to be guarded against. Samples of a specialty newly placed on the market shall, after a three year introductory period, be given out only on the request of a particular physician, and unsolicited samples will no longer be supplied. Pharmacists may not accept physicians' samples from the physicians themselves, even as gifts. On the other hand, pharmacists are forbidden to engage in the industrial fabrication of pharmaceutic substances which bear proprietary trade names or otherwise to engage in the wholesale drug trade. The number of differently sized packages of a particular product is also to be curtailed, as these variations have been a source of annoyance to both manufacturer and pharmacist.

The great vogue for so-called therapeutic plants, especially marked in Germany, has also been the subject of previous detailed reports. A "first German Congress of Herbal Medicine" was recently held at Munich in conjunction with an exhibition of pertinent material. The specific results of this congress are not known. In an interesting article that appeared recently in the *Münchener medizinische Wochenschrift* it was suggested that in view of the present increased use of domestic herbs and plants in the manufacture of pharmaceutic substances the utmost care must be exercised in the collection and particularly in the selection of medicinal plants. Dr. Patschkowski has lately described a case of poisoning from "decoctum lignorum." The beverage ingested was one of the German medicinal herb teas, the product of an "herb house"; namely, a firm that deals principally in various kinds of therapeutic herbs. The decoction was shown on analysis to contain substantial quantities of root of Atropa belladonna. Although only one teaspoonful had been boiled with one cup of tea, manifestations of poisoning appeared three and a half hours after ingestion. In this case, as happens not infrequently, burdock root (Arctium lappa) had been mistaken for the root of Atropa belladonna.

But now a serious attempt has at last been made, by Dr. Vollmer of the Pharmacologic Institute of Breslau University, to combat the exaggerated emphasis that has been placed on herbal therapeutics. In an article contributed to the *Süddeutsche Apotheker-Zeitung*, Vollmer makes the point that the question of therapeutic plants has not been nearly so neglected by academic pharmacology as frequent assertions would imply. Nor ought it to be. But the importance of therapeutic plants has in present-day Germany become most grossly exaggerated and one encounters much that is not of clinically verified value. Vollmer enumerates a whole series of plants which, although theoretically capable of producing the effects claimed for them, factually remain of dubious therapeutic worth. Scientific knowledge of the exact action of these substances on the organism is frequently deficient. The author also speaks of the "lack of a basis for the prescription" of such medicaments. All this zeal for herbal medicine is merely a flash in the pan. Many persons have rightly described this movement as a turning back of the clock of time. And all this quite apart from such things as the attribution to a certain plant (savin) of virtues effective only during the odd-numbered months. Furthermore, on the basis of correct enough pharmacologic analyses, incorrect generalizations are formulated. How can a physician retain faith in herbal medicine if at one and the same time four dozen different infusions are recommended to him as spring cures and if an equal number of infusions are recommended for the treatment of climacteric complaints? And all this without the inclusion of a single scientific description of the way in which these mixtures act.

The foregoing observations of a pharmacologist who has remained closely connected with the government are sound.

In addition, a sort of campaign against mysterious panaceas is to be conducted by the National Socialist Health Administration, a campaign against those products which carry neither on their wrappers nor in advertisements any description of the ingredients. Among these are included endocrine preparations, the advertising of which has developed into a nuisance. The most incredible virtues have been claimed for these products and all based on the presence of some mysterious anonymous principle.

Finally, mention should be made on this occasion of the recent trial of a homeopathic physician who was charged with criminal negligence in the deaths of three persons from diphtheria because of his failure to administer injections of serum. The defendant stated that he had treated some twenty other diphtheria cases according to homeopathic methods and none of these cases had ended fatally. In this particular instance, however, a mother and her two children had died, whereas the husband and father, who was ill at the same time, recovered. The physician had refrained from the use of serotherapy, as in his opinion this method of treatment exerts a harmful effect on the organism, whereas homeopathic remedies are innocuous. Moreover, he had refused to permit the calling in of a second physician. The prosecutor asked a sentence of ten months imprisonment but the tribunal acquitted the defendant. In the opinion of this court, a refusal to administer antidiphtheritic serum could not be construed as criminal negligence, since science itself has as yet arrived at no definite evaluation of the serum, a fact that is reflexed by the absence of any law compelling the administration of antidiphtheritic serum. On the other hand, said the court, homeopathy is as much a recognized science as any other (thanks to the present régime) and furthermore no expert had been able to testify that if timely injections of serum had been administered the three deceased persons would have survived. The judgment of this court and the reasons alleged therefor are characteristic of the present attitude toward medical science in Germany.

One more item should be reported. The national führer of pharmacists has introduced a uniform escutcheon for all German pharmacists. It is an old Germanic runic device. It bears a heraldic letter A (for apotheker) in red and a so-called manes-rune in white at the intersection of the left side-bar with the fess. The manes-rune is intended to be a symbolic representation of strength, health and life. The new emblem of the pharmacists has been registered at the national patent office. It may be displayed by any proprietor of a public pharmacy who belongs to the German Pharmacists' Association. The new escutcheon will at the same time do away with the use of the varied signs, the serpent and the cup, for example, as well as the use of the older pharmacists' escutcheon, which was a reverse of that of the Red Cross; namely, a white cross on a red field. The latter happens to be the coat of arms of Switzerland and from January 1, 1937, it will enjoy legal protection as such. This means that it must disappear from German apothecary shops, although till now it has been extensively used as a distinguishing mark of the German pharmacists.

NETHERLANDS

(From Our Regular Correspondent)

Jan. 8, 1937.

Habitual Alimentation

Drs. Banning and Den Hartog have submitted to the health organization of the League of Nations a study of present-day alimentary habits in the different provinces of the Netherlands. In the last few years the amount of fats consumed in the Netherlands has been on the increase. It cannot be said that this increase has taken place at the expense of the carbohydrates and/or the proteins, for the balance between these two elements has been well enough maintained. This increased consumption of fat has resulted in a notable, even perhaps an excessive, increase in caloric values. The increase in fats may be ascribed to the fact that the last few years were more prosperous than the immediately preceding years. The amount of protein nutriment consumed appears to be quite sufficient: the proportion of animal proteins of a high caloric value is in any event considerable. In highly industrialized or stock-raising regions there is a much greater consumption of milk and butter than in regions where agriculture properly speaking is the population's principal means of sustenance, the province of Groningen, for example. In purely agricultural areas the need for fats is met by recourse to fat-containing foods other than dairy products; to bacon, for example. In Drente a much poorer region of small stock farms, a greater part of the necessary calories is obtained from the potato and from farinaceous foods. The huge quantities of legumes and fruits consumed in the little industrial town of Zaandam may be strikingly compared with the small amount of the same comestibles eaten by the country folk of Westzaan. The Zaandam people also consume a greater amount of sugar and of fancy goods. Any project for feeding the unemployed must take into account the accustomed alimentation of a given population. The inhabitants of industrial urban communities have acquired eating habits which differ to a degree from those of the rural population. The unemployed townsman feels and quite rightly that he should receive a different type of food supply than that which is suitable for his rural compatriot.

Antiplague Vaccine

Dr. Otten, director of the Pasteur Institute at Bandoeng, is introducing a new type of his "Otten vaccine" against plague. The vaccine in use heretofore with favorable results has been prepared from the stock of "Tjiwidej" rats. This serum has, however, not been effective against buboes. Dr. Otten has found a new stock from which he obtains a vaccine composed of an antigen other than the "Tjiwidej" stock. This new vaccine is capable of preventing not only plague but tumefaction of the buboes as well. It will be placed in use during 1937.

The Death of Dr. Van Lint

Dr. J. G. Van Lint died recently at the age of 69. A practicing physician in the city of Gorinchem, he was the founder of the Institute of the History of the Natural Sciences in the Netherlands and in addition he was the first professor of the history of medicine at the University of Leyden. He was president of the international congresses of the history of medicine held at Leyden and at Amsterdam. Dr. Van Lint was the author of excellent works on Vesalius, Boerhaave, Dodonaeus and van Leeuwenhoek. Only last year he gave a lecture on the medicine of ancient Egypt which attracted worldwide attention among groups interested in the historical development of medical science. He organized the historical exhibits of army medical services on the occasion of the sixth International Congress of Military Medicine and Military Pharmacy, held at The Hague in 1931.

ITALY

(From Our Regular Correspondent)

Dec. 15, 1936.

The National Congress of Internal Medicine

The forty-second National Congress of Internal Medicine, held recently at Rome, was attended by the directors of all the clinics of the Italian universities and by a large number of foreign professors, among whom were Drs. von Lexer of Munich, Schmieden of Frankfort and Petit Dutaillis of Paris. Drs. Cesa-Bianchi and Calabresi of Milan were the official speakers on the topic "Physiopathology of Chronic Circulatory Decompensation." Professor Schiassi spoke on a form of chronic insufficiency of the peripheral circulation which originates only in the presence of adhesive pleuritis of the right pleura. The gravest forms are those caused by total adhesive right pleuritis with strong retraction of the right hemithorax, immobility of the right hemidiaphragm, partial stertorous respiration and normal mobility and expansion of the left hemithorax. The speaker believes that this form of circulatory insufficiency is due to pressure on the inferior vena cava and the suprahepatic veins, which are pulled by the left hemidiaphragm during inspiration.

The second official topic, "Nephritis and Nephrosis," was discussed in common by the internal medicine and the surgical societies. Dr. Silvestrini, professor of clinical medicine at the University of Perugia, the speaker for the internal medicine societies, made a critical review of Volhard's classification of nephritis. Inflammation frequently occurs in the nephrotic kidney; there may be different types of inflammation and different intensity of degeneration of the cells of the tubules in glomerulitis; a differentiation of benign from malignant nephrosclerosis is based on the speed of evolution of the disease. The speaker gave a report on experiments performed at the medical clinic of Perugia in which the curve of azotemia was determined, following administration of urea, in rabbits which had been subjected to an operation on the kidney. In cases of nephritis, the operation indicated is that which deals with the foci which cause inflammation rather than with the nephritic kidney. It is advisable, however, to resort to autovaccine treatment before deciding anything about an operation. Professor Mingazzini of Rome was the official speaker for the same subject in the surgical field. Nephritis and nephrosis are rarely treated by surgery. One difficulty is the lack of an exact classification of nephritis. Volhard's classification is still used for establishing surgical indications. The several types of renal operations are nephrectomy, nephrotomy, nephrolysis, decapsulation and innervation of the organ, decortication of the renal artery, chemical sympathicolysis of the renal peduncle, paravertebral neurolytic injections and ramisection, which operations, with the exceptions of nephrectomy, nephrotomy and decapsulation of the kidney, are rarely performed. Decapsulation of the kidney is frequently done in treating chronic and subacute forms of nephritis. Pousson reported statistics of 153 cases. Decapsulation has not been satisfactory in nephrosis and in certain forms of nephritis. Decapsulation is indicated in hemorrhagic nephritis, which is controlled in all cases by the operation.

The third official topic was "Pathologic Leanness and Adiposity." Professor Galdi of the University of Pisa, with the collaboration of Professors Cassano, Monasterio and Lami, was the speaker. They deny the predominant rôle of appetite as the exogenous factor for the development of adiposity. Disturbances of appetite, which are frequent in persons who are underweight, play a pathogenic part in the development and evolution of leanness. The thyroid is the main motor in the system which produces organic combustion; next in importance are the adrenals. The anterior part of the hypophysis has a direct influence on the regulation of additional energy expended (the so-called luxury metabolism) and also an indirect influence on the basal metabolism by means of the thyrotropic hormone and on the intermediate metabolisms. The insular hormone produces combustion of glycogen, polymerization of dextrose into glycogen and transformation of dextrose into fat. Exogenous adiposity does not exist, regardless of the fact that hyperalimentation and inactivity seem to be of great importance. Hypo-alimentation is the main causal factor of leanness in many cases. In thyroid leanness and in certain forms of essential leanness the basal and additional (luxury) metabolisms are increased. Pathogenic forms of leanness may exist in certain cases regardless of a liberal allowance of energizing substances. Hypophyseal thinness seems to be due to anorexia originating in changes of the diencephalohypophyseal area, in which the center of appetite seems to be located. The origin of adiposity associated with hyperfunction of the hypophysis is unknown. In some cases it seems to be due to hyperadrenalism, secondary to hyperpituitarism. The physiopathology of the pineal body is not yet clearly understood. The thyroid does not play an etiologic part in adiposity. The conception of the existence of a thyroid adiposity is clinical. The rôle of thyroid disturbances in leanness is obvious. Adiposity which complicates gonadal insufficiency or sexual inactivity seems to depend on diencephalohypophyseal disturbances. Climacteric adiposity is constitutional. It is stimulated by the climacteric changes.

The next congress will take place at Turin, and the official topics will be "Chronic Colitis," "Pathology and Treatment of Neurohypophyseal Syndromes" and "Pathology of the Aged." The speakers for the first and third topics will be Professors Ferrata and Bastai, respectively. The second topic will be in common for the internal medicine and surgical societies. The speakers for this topic will be Professors Guglielmo and Chiasserini.

Marriages

Victor E. Brown, Washington, N. C., to Miss Frankie Lucille Ramseur of Winston-Salem, Nov. 26, 1936.

Willard Cardwell, Greensboro, N. C., to Miss Amelia Martha Hall of New York, Nov. 18, 1936.

Ella I. Duff, Boston, to Mr. George Alvah Good of Fredericton, N. B., Canada, Nov. 17, 1936.

Joseph Peter Markey to Miss Mary Agnes Kretschmer, both of Saginaw, Mich., Nov. 26, 1936.

William Perry Moore Jr. to Miss Mary Elfreth Eggleston, both of Norfolk, Va., Nov. 14, 1936.

Jacob Zern Heberling, Bangor, Pa., to Miss Norma Rebecca Nyce of Jenkintown, Nov. 7, 1936.

Joseph M. Hitch, Charlottesville, Va., to Miss Helen F. Goss of Cleveland, Nov. 7, 1936.

Roland Lincoln Kesler, Chicago, to Miss Margaret Lee of Gordon, Neb., Nov. 14, 1936.

Deaths

Frank Smithies ● Chicago; Chairman of the Section on Gastro-Enterology and Proctology of the American Medical Association, 1919-1920, member of the House of Delegates, 1927-1930, and in 1930 appointed a member of the Council on Scientific Assembly for five years, died, February 9, in the Augustana Hospital, of a cerebral hemorrhage, aged 56. Dr. Smithies was born in Elland, Yorkshire, England, Dec. 21, 1880. He received the medical degree from the University of Michigan Department of Medicine and Surgery, Ann Arbor, in 1904, and later studied abroad. He had been assistant in the clinical laboratory, instructor in medicine and demonstrator in clinical medicine at his alma mater, assistant in medicine at Rush Medical College, Chicago, assistant in pathology at the University of Berlin, and attending physician to the University of Michigan Hospital. From 1910 to 1913 he was in charge of the gastro-enterologic laboratory and an assistant in one of the sections on medicine at the Mayo Clinic, Rochester, Minn. He was appointed gastro-enterologist in the Augustana Hospital, Chicago, in 1913, and attending physician in 1922. He became associate professor of medicine at University of Illinois College of Medicine in 1917 and professor of medicine in 1922. Dr. Smithies was a fellow and past president of the American College of Physicians and the American Therapeutic Society; member and past president of the American Gastro-Enterological Association; formerly secretary general of the American Congress on Internal Medicine, and past president of the American Society of Tropical Medicine. He was formerly physician in chief and head of the department of medicine at St. Elizabeth's Hospital, attending physician at the Henrotin Hospital, chief of clinic in digestive diseases at the Municipal Tuberculosis Sanitarium and consulting physician to the Chicago, Milwaukee, St. Paul and Pacific Railroad. During the World War he was consultant in medicine in the U. S. Public Health and Marine Hospital Service, Port of Chicago; secretary and consulting internist, Medical Advisory Board 3B, Chicago, and member of the Illinois State Board of Advisers in Administration of Draft. In 1930 he was appointed a foreign member of the Société medicale des hôpitaux de Paris and in 1933 was awarded the cross of the French Legion of Honor. Dr. Smithies was the author of "Cancer of the Stomach" and of numerous articles and was editor in chief of the *American Journal of Digestive Diseases and Nutrition* and on the advisory board of the *American Journal of Tropical Medicine*.

John Francis Hagerty ● Newark, N. J.; University of the City of New York Medical Department, 1892; member of the House of Delegates of the American Medical Association in 1926 and 1927 and from 1930 to 1936; past president of the Medical Society of New Jersey and the Essex County Medical Society; fellow of the American College of Surgeons; served during the World War; for many years medical director and attending surgeon to St. Michael's Hospital; attending surgeon to the Hospital and Home for Crippled Children; consulting surgeon to St. Peter's General Hospital, New Brunswick, St. Vincent's Hospital, Montclair, Presbyterian Hospital, Newark, and St. Mary's Hospital, Orange; in 1930 was awarded an honorary doctor of laws from Seton College, South Orange; was president of the High Point Park Commission, 1925-1936; aged 67; died, February 1, of pneumonia.

Anexamander M. Hayden ● Evansville, Ind.; Starling Medical College, Columbus, Ohio, 1875; member of the House of Delegates of the American Medical Association, 1906 and 1908; past president of the Ohio Valley Medical Association and the Vanderburgh County Medical Society, and vice president of the Indiana State Medical Association; fellow of the American College of Surgeons; member of the Medical Service Corps during the World War; for eight years president of the city board of health; for many years chief of staff of St. Mary's Hospital; formerly owner of a hospital bearing his name; aged 84; died, February 9, in the Methodist Hospital, Indianapolis, of arteriosclerosis.

Arthur George Bennett ● Buffalo; University of Buffalo School of Medicine, 1891; member of the House of Delegates of the American Medical Association in 1926; professor of ophthalmology, emeritus, at his alma mater; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; consulting ophthalmologist to the Children's, Deaconess, Lafayette General, Buffalo General and Columbus hospitals, Buffalo, and the J. N. Adam Memorial Hospital, Perrysburg; on the staff of the Craig Colony, Sonyea; aged 75; died, Dec. 28, 1936, of carcinoma of the lung.

Orville O. Witherbee ● Los Angeles; Northwestern University Medical School, Chicago, 1893; a founder and fellow of the American College of Surgeons; past president of the Los Angeles County Medical Society and the Los Angeles Clinical and Pathological Society; formerly professor of surgery and clinical surgery at the Medical Department of the University of Southern California; on the staff of the Los Angeles County Hospital; aged 72; died, Dec. 24, 1936.

Rollin Otis Crosier, Johnson City, N. Y.; University of Buffalo School of Medicine, 1900; member of the Medical Society of the State of New York and the Associated Anesthetists of the United States and Canada; health officer of Johnson City and school physician; on the staff of the Charles S. Wilson Memorial Hospital; aged 59; died, Dec. 17, 1936, of cerebral hemorrhage.

Alfred H. Easterling, Athens, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1897; member of the State Medical Association of Texas; president and formerly secretary of the Henderson County Medical Society; for many years member and secretary of the school board; formerly county health officer; aged 71; died, Dec. 29, 1936, of pneumonia.

Walker Bourne Gossett, Lexington, Ky.; Louisville Medical College, 1896; member of the Kentucky State Medical Association; at one time instructor in obstetrics at his alma mater; formerly on the staff of the Western State Hospital, Hopkinsville; aged 63; on the staff of the Eastern State Hospital, where he died, Dec. 27, 1936, of coronary occlusion.

George Allen Grinde ● Cumberland, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; founder of the Island City Hospital, now known as the Cumberland Hospital, of which he was part owner and one of the physicians in charge; aged 56; died, Dec. 13, 1936, of chronic nephritis and hypertension.

George H. T. Sparling, Grand Coulee, Wash.; University of Oregon Medical School, Portland, 1890; member of the Washington State Medical Association; at one time coroner and health officer of King County; formerly health officer of Clark County; health officer of Grand Coulee dam; aged 67; died, Dec. 26, 1936, of pneumonia.

Caroline Sandford Finley ● New York; Cornell University Medical College, New York, 1901; was decorated by both the French and British governments for bravery during the World War; served the New York Infirmary for Women and Children in various capacities; aged 61; died, Dec. 28, 1936, of heart disease.

William Waddell Skinner ● Geneva, N. Y.; University of Buffalo School of Medicine, 1887; past president of the Ontario County Medical Society; on the staffs of the Willard (N. Y.) State Hospital and the Geneva General Hospital; aged 76; died, Dec. 28, 1936, of cerebral thrombosis and acute suppurative otitis media.

Charles David Weaver ● Twin Falls, Idaho; Colorado School of Medicine, Boulder, 1897; president of the South Side Medical Society; city and county health officer; served during the World War; on the staff of the Twin Falls County General Hospital; aged 68; died, Dec. 22, 1936, of a streptococcic infection.

Ralph Douglas Porch, Sylacauga, Ala.; University of Louisville (Ky.) Medical Department, 1907; member of the Medical Association of Alabama; formerly secretary of the Talladega County Medical Society; on the staff of the Sylacauga Infirmary; aged 53; died, Dec. 27, 1936, at a hospital in Chicago.

George Lewis Wetzel, Union Mills, Md.; Southern Homeopathic Medical College, Baltimore, 1906; member of the Medical and Chirurgical Faculty of Maryland; member of the county board of health and board of education; aged 50; died, Dec. 22, 1936, in the Hanover (Pa.) General Hospital, of cardiorenal disease.

Jay Harvey Durkee, Jacksonville, Fla.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; at one time secretary of the Fourth District of the Florida Board of Medical Examiners; for many years surgeon for the Southern Railway; aged 66; died, Dec. 29, 1936.

Arthur Jacques Melchior Schneidenbach, Leonia, N. J.; Maryland Medical College, Baltimore, 1901; veteran of the Spanish-American War; member of the board of health of New York City, 1905-1918; aged 60; on the staff of the Hackensack (N. J.) Hospital, where he died, Dec. 12, 1936, of acute ileus.

Harry Clinton Crocker, Providence, R. I.; Boston University School of Medicine, 1894; formerly member of the

House of Representatives and of the school committee of Providence; aged 67; died, Dec. 24, 1936, in the Jane Brown Memorial Hospital, of heart disease.

Herbert Ong Calhoun, Denver; University of Colorado School of Medicine, Denver, 1920; for many years on the staff of the Agnes Memorial Sanatorium; aged 43; died, Dec. 17, 1936, in the Swedish National Sanatorium, Englewood, of pulmonary tuberculosis.

John Dawson Carty, Portsmouth, N. H.; University of Vermont College of Medicine, Burlington, 1906; formerly city physician, health inspector and bacteriologist; trustee of the New Hampshire State Hospital, Concord, for ten years; aged 60; died Dec. 20, 1936.

Henry Robertson Conway ● Marshall, Mo.; University Medical College of Kansas City, 1912; past president of the Saline County Medical Society; aged 51; on the staff of the John Fitzgibbon Memorial Hospital, where he died, Dec. 14, 1936, of heart disease.

Samuel Louis Weber ● Chicago; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888; on the staff of the Hospital of St. Anthony de Padua; aged 75; died, Dec. 18, 1936, of coronary embolism and arteriosclerosis.

Edwin F. Winegar, Chicago; Chicago Physio-Medical College, 1898; member of the Illinois State Medical Society; formerly on the staff of the Illinois Central Hospital; aged 70; died, Dec. 8, 1936, in a hospital at Phoenix, Ariz., of meningitis.

Peter Frailey Wells ● Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1881; aged 77; died, Dec. 16, 1936, in the Graduate Hospital of the University of Pennsylvania, of carcinoma of the hepatic flexure of the colon.

Samuel Lee Edwards, Tuscaloosa, Ala.; University of Maryland School of Medicine, Baltimore, 1899; served during the World War; on the staff of the Veterans Administration Facility; aged 65; died, Dec. 30, 1936, of coronary thrombosis.

Oscar Francis Shewmaker, Louisville, Ky.; University of Louisville Medical Department, 1907; member of the Kentucky State Medical Association; on the staff of the Veterans Administration; aged 53; died, Dec. 20, 1936, of heart disease.

Thomas J. Pendergast ● Milwaukee; Northwestern University Medical School, Chicago, 1893; on the staff of St. Mary's Hospital and St. Vincent's Infants' Asylum; aged 73; died, Dec. 22, 1936, in St. Joseph's Hospital, of heart disease.

Clement C. Collins ● Roachdale, Ind.; University of Louisville (Ky.) Medical Department, 1892; past president of the Putnam County Medical Society; aged 66; died, Dec. 29, 1936, in a hospital at Crawfordsville, of uremia and nephritis.

Joseph Reagan Hamlin, St. Louis; Washington University School of Medicine, St. Louis, 1910; member of the Missouri State Medical Association; aged 51; died, Dec. 27, 1936, in the Missouri Baptist Hospital, of coronary occlusion.

Samuel Allen Oren, Lewistown, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; State University of Iowa College of Homeopathic Medicine, Iowa City, 1878; aged 82; died, Dec. 9, 1936, of diabetes mellitus.

Robert L. Thomson, Almota, Wash.; Kentucky School of Medicine, Louisville, 1880; member of the Washington State Medical Association; aged 80; died, Dec. 10, 1936, in Lewiston, Idaho, of heart disease.

Thomas W. Treharne, Zimmerman, Ohio; Detroit College of Medicine, 1892; past president of the Greene County Medical Society; aged 73; died, Dec. 26, 1936, of myocarditis and bronchopneumonia.

Ralph Dana Goodwin ● East Pittsburgh, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1908; aged 56; died, Dec. 14, 1936, in the Mercy Hospital, Pittsburgh, of coronary thrombosis.

John R. Coze, North English, Iowa; State University of Iowa College of Medicine, Iowa City, 1880; aged 83; died, Dec. 22, 1936, in the University Hospital, Iowa City, of arteriosclerosis.

Henry Middleton Woolman, Asbury Park, N. J.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; aged 69; died, Dec. 5, 1936, of cerebral hemorrhage.

Leyden Frederick Wilson, New Kensington, Pa.; University of Pittsburgh School of Medicine, 1912; aged 48; died, Dec. 13, 1936, in the Citizens General Hospital, of septicemia.

Wilhelm Nobbe, St. Louis; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1895; aged 67; died, Dec. 11, 1936, in the Missouri Baptist Hospital, of intestinal obstruction.

Bureau of Investigation

MARMOLA

The Federal Trade Commission, in a release dated January 25, stated that it had ordered the Raladam Company of Detroit to cease and desist from certain misrepresentations in the sale of its product "Marmola."

Marmola is an old timer in the obesity-reducing field and has been in difficulties before with the federal authorities. In 1926 the postal authorities were about to issue a fraud order against the Marmola Company when the manufacturer submitted an affidavit declaring that he would absolutely discontinue the Marmola enterprise on April 1, 1927. The manufacturer did discontinue the sale of Marmola through the mails at that time but created the Raladam Company, which continued to sell the product through the retail drug stores—a method not infrequently employed by "patent medicine" houses in order to stay in business after the issuance of a Post Office fraud order.

In February 1928 the Federal Trade Commission issued a complaint against the Raladam Company, and hearings were held in Chicago, Detroit and Washington, D. C. At the close of the hearings the Federal Trade Commission ordered the Raladam Company, its officers, agents, representatives and employees, to cease and desist from certain representations in connection with the advertising, offering for sale, and sale in commerce in the several states of the United States of the product Marmola (THE JOURNAL, May 4, 1929, p. 1541).

However, the Federal Trade Commission's cease and desist order against the Raladam Company was vacated by the United States Circuit Court of Appeals on June 28, 1930 (THE JOURNAL, Aug 2, 1930, p. 359). The Raladam Company, being freed from the Federal Trade Commission's action, has continued unhampered to dispense its tablets containing desiccated thyroid to the obese.

The present action of the Federal Trade Commission prohibits the representation "that thyroid deficiency is a common or the usual cause of obesity or excess fat or that, if a person

is overweight, it is necessarily an indication of thyroid deficiency and that thyroid should be taken for reducing." The company is also directed "to cease asserting that all modern physicians use the reducing ingredient in Marmola in the treatment of obesity and that this method of treatment in all such cases is supported by the opinion of science and medicine the world over, or that this treatment is the remedy indicated in and best suited for the great multitude of cases or in the average case, or for all over-weight persons." The company is further ordered "to cease and desist representing that it makes a full and complete disclosure of the properties and effects of Marmola or its ingredients, unless and until it does in fact make such disclosure, including the following: That desiccated thyroid is a powerful and dangerous drug or product when used internally for reducing purposes . . . that cases of abnormal excess fat caused by deficiency of the secretion of the thyroid gland are rare and exceptional; that physicians prescribe and recommend the use of thyroid for treating obesity only in cases of actual deficiency of thyroid gland secretion; that in cases of excess fat not caused by thyroid deficiency, thyroid is not usually indicated as a proper treatment, and its use in such cases is apt to be and frequently is harmful to the user's health."

Medical and scientific opinion, on which the Federal Trade Commission based its conclusions, was to the effect that only a small proportion of cases of overweight result from thyroid deficiency; that in many cases Marmola cannot be safely used and, in any case, should be taken only on the advice of a physician.

In 1930 the Raladam Company of Detroit, under the claim "This prescription is based on 22 years of experience . . . prepared for us in a world-famous medical laboratory," published the following formula for Marmola:

"1 grain	Extract Bladderwrack
½ grain	Extract Phytolacca
¼ grain	Extract Cascara Sagrada B. P. 87 Spec.
½ grain	Desiccated Thyroid
¼ grain	Phenolphthalein
16/1000 min.	Oleoresin Ginger
	Po. Saccharum special
3 grains	Calcium Carbonate Precipitated
1/24 min.	Methyl Salicylate
1/24 min.	Oil Anise
1/24 min.	Oil Sassafras
	Talc Brown
	Ivory Black
	Aqua for Extracts
	Po. Burnt Umber
	Red Oxide of Iron
	Syrupus Simplex
	Lubricating Solution
	Aqua for Granulating
	Liquid Petroleum colorless"

The "world-famous medical laboratory" was not identified. Imagination fails when attempting to visualize Marmola given another twenty-two years of experience. The present action of the Federal Trade Commission closes another interesting chapter in the Marmola story, but not necessarily the finale.

KELPODINE TABLETS

Seaweed Tablet Exploiters Fined

The United States Department of Agriculture at Washington, in a release for Jan. 17, 1937, states that it has concluded its case and imposed fines against John Lee Clarke and William J. A. Bailey of New York, proprietors of the Lee Kelpodine Company, Inc., manufacturers of "Kelpodine Tablets." According to the report, which was entitled "Seaweed Tablets No Good in 30 Different Ways," the tablets "were made of compressed seaweed or kelp and were fraudulently offered for the treatment of 32 specific diseases and 'other conditions.'" The diseases and conditions for which Kelpodine Tablets were offered include many of the most stubborn disorders known to medicine. The report further states: "The complete list for which these fakers recommended their seaweed products is as follows: pyorrhea, headache, indigestion, tuberculosis, cancer of the liver, glandular trouble, nervousness, dental caries, underweight, anemia, constipation, general weakness, melancholia, digestive disturbances, asthma, rickets, bone diseases, chlorosis, eczema, stomach disorders, nervous breakdown, migraine, high blood pressure, stomach ulcers, hay fever, liver congestion, subnormal growth, mental exhaustion, neurasthenia, rheumatism, arthritis, obesity and other conditions."

The Lee Kelpodine Company, Inc., utilized in its pamphlets and form letters the health fad nonsense so popular at the present time with the itinerant "nutrition" lecturer: that mineral deficiency in the daily diet is the most serious problem in modern medical treatment. Little has appeared in scientific literature on the use of kelp in medicine, but kelp as a source of iodine has been known to chemists for a great many years. Kelpodine was found not admissible to "Accepted Dental Remedies" in February 1935 by the American Dental Association.

William J. A. Bailey formerly traded as the Bailey Radium Laboratories, East Orange, N. J., and exploited a dangerous radioactive preparation known as "Radithor," to which was attributed the death of a prominent citizen of Pittsburgh, Eben M. Byers. The death of Mr. Byers focused nation-wide attention on the dangers of Radithor and forced Bailey to cease marketing that product.

Correspondence

USE OF JOURNAL BY LUNCHEON STUDY CLUB

To the Editor:—Perhaps this might be of interest to THE JOURNAL: Our hospital staff formed a luncheon club. We meet the same day each week at 12:30. The club is known as the A. M. A. Club. Three of the most interesting articles of THE JOURNAL are chosen by the chairman of our club. One of these articles is given to each man to digest and present a summary of the article. He is given five or six minutes to do this. The chairman of the club also in a five or six minute talk gives a review of the principal articles of THE JOURNAL. The result of this has met with favor in that every man feels that he is missing a great deal when he neglects reading his copy of THE JOURNAL. Especially do the men whose duty it is to give a digest of the articles get a great deal from the subject discussed.

I just pass this on to THE JOURNAL as a suggestion for other hospital groups so that our mouthpiece, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, might be reviewed.

W. A. MCMILLAN, M.D., Charleston, W. Va.

FERROUS SULFATE FOR WORMS

To the Editor:—In view of the difficulty sometimes found in getting rid of Trichuris trichiura infestation, the following note may be of interest: I purchased a small sheep-dog pup from a famous kennel and was distressed to find a week later that he was infested not only with Ascaris and hookworm but also with whipworm. I treated him with a standard preparation of tetrachlorethylene and completely eliminated the Ascaris and hookworm but found no reduction in the quantity of whipworm eggs, which averaged 8 or 10 to a low power field in simple smear preparations. These eggs were invariably present on repeated examinations over several weeks. The dog suffered from severe colitis, passing mucus and blood in loose stools, and was obviously anemic. Having at hand samples of a well known preparation of coated tablets of ferrous sulfate 3 grains (0.2 Gm.), I gave the dog, which weighed 10 pounds (4.5 Kg.) one tablet daily for a fortnight, and finally two tablets one day. The following day he passed a mass of whipworms and since then, nearly two years ago, I have never found a whipworm egg in his stool. Subsequently I read, in Ashmont's Kennel Diseases (Boston, Little, Brown & Co., 1924, pp. 333-334), "A remedy for worms (Ascaris) which acts well as a rule with puppies, is the sulfate of iron. This is not only quite a potent vermifuge but an admirable tonic." I have had no subsequent opportunity to test the anthelmintic effect of ferrous sulfate, but as an iron tonic is frequently indicated in treating infested patients, it would seem worth trial and observation, by others.

MARY PUTNAM, M.D., Rye, N. Y.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

NEUFELD METHOD OF TYPING PNEUMOCOCCI

To the Editor:—Would you kindly tell me of the Neufeld method of typing pneumococci. If you cannot detail it please tell me where I can find it. Please omit name. M.D., Maryland.

ANSWER.—In the presence of homologous capsule swelling antibodies, the capsules of pneumococci swell.

The swollen capsule (Neufeld) test for the typing of pneumococci is performed by taking a fleck of sputum or fluid containing pneumococci and adding serums of rabbits made immune to the different types of pneumococci. The serums may be added singly or in groups of several types. When a group is found with which the capsule swells, the individual types contained are tested individually. It is customary to test for type I separately because at least one fourth of the cases are due to this type.

Standard alkaline methylene blue is either added to the mixed sputum and serums or the serum may contain the dye. Reliable serums for performing the test are obtainable from some manufacturers of biologic products (Lederle Laboratories; Parke, Davis & Co.) in capillary tubes or in small vials. Swelling of the pneumococcus capsules occurs with homologous horse serum, therapeutic serum, or serum from patients recovering from pneumonia of homologous type. Such serum may not possess the sharp type specificity of serum prepared in rabbits. Good swelling of the capsules with homologous serum may not appear either because too large an amount of sputum in proportion to the amount of serum is used or because too many organisms are in the exudate or culture in proportion to the amount of capsule swelling antibody. This difficulty is overcome by diluting the exudate with physiologic solution of sodium chloride prior to applying the serum. If all the organisms in a preparation are not swollen by the type applied, it is due to the fact that another type of pneumococcus is present.

When organisms are present in broth, a bile solubility test should be performed.

About three fourths of the cases of pneumococcic pneumonia may be typed directly by the Neufeld examination of the sputum; the remainder may require either mouse inoculation or other methods of study, such as blood culture or aspiration of lung juice. The type obtained by examination of the sputum is correct in 93 per cent of cases. The method is described in detail in the following reference, which gives a bibliography: Bullowa, Jesse G. M., with technical assistance of Somers, Mildred, and Turner, Edward: The Reliability of Sputum Typing and Its Relation to Serum Therapy, THE JOURNAL, Nov. 9, 1935, page 1512.

THIRTEENTH CRANIAL NERVE—RESEARCH IN GROSS ANATOMY

To the Editor:—I have a keen desire to know whether there is anything to the discovery of a thirteenth cranial nerve. I heard some doctors mention it. Also I should like to know whether any gross anatomic discovery of any kind has been made since 1913, when I graduated from the Kansas Medical College—new nerves or glands, brain areas for example. Is any more research being done on gross anatomy and by whom if any? Is it a completely fully worked out subject?

HARVEY P. CHARLES, M.D., Kansas City, Kan.

ANSWER.—The "thirteenth," or extracranial, nerve has often been overlooked. It is the most anterior one (first) in the cranial series, being distributed (in man and mammals) to the upper and anterior part of the nasal septum. It is sensory, homologous with the dorsal spinal and lateral cranial nerves. It is well developed in Amphioxus (sensory from skin anterior end) and is present in practically all higher vertebrates, being easily demonstrable in the fetus of some (man, rabbit), also in the adult of others (horse, ox, dog, cat, squirrel). It consists in mammals of a number of filaments joined in a plexiform way, extending to the anteromedial part of the cribriform plate of the ethmoid, which it perforates in three twigs. It is continued (plexiform) on the lower surface of the olfactory bulb and tract. Behind the bulb its fibers enter the lower surface of the frontal lobe in a series extending back almost to the optic chiasma. It is probable that some sympathetic fibers join it, as there are a number of tiny ganglions along it, one large one (ganglion terminale) lying on its upper course within the skull. A good account of it in mammals is given by Larsell (*J. Comp. Neurol.*, 1918). He says it is somatic sensory to the epithelium of the nasal septum, and visceral sensory and motor to local blood vessels.

Gross anatomy is not a "fully worked out subject." Formerly it was the chief field in anatomic research. During the last seventy years microscopic anatomy, embryology, neurology and tissue culture have attracted more attention. But work directed partly or entirely to gross anatomy has gone on steadily. The x-rays have afforded a valuable new method of study of living subjects and of changes in form and relations in activity.

Some of the lines along which progress has been made in this century and a few (only) of the workers are: anthropometry, Jackson, Todd, Hrdlička; anatomy of the child, Symington; growth measurements, Donaldson, Scammon; life history, age and death, Minot, Rolleston, Williams; bone development, Pryor, Grumbach; joints, Fick; muscles and their action, Mackenzie, Wright; position of the viscera in living people, Moody; teeth, Schour; respiratory apparatus, Macklin; heart, MacCallum, Tandler; blood vessels, Adachi, Huntington, Senior; lymphatics, Sabin, Clark, Bartels, Moody, Van Nuys; brain and its growth, Donaldson, Herrick, Ranson; nerves, Bardeen, Tilney, Kerr; comparative anatomy and evolution, Huntington, Parker, Kingsley, Rand. References to recent literature may be found in the bibliographic cards of the Wistar Institute of Anatomy, the *Quarterly Cumulative Index Medicus* and the *Anatomischer Bericht.*

BRUCELLA INFECTION OF OVARIES AND UTERUS

To the Editor:—Will you please give me what practical data you can on undulant fever. I am interested in whether or not the organism attacks the ovaries and the uterus. What importance do you place on a "positive" skin test when the agglutination is negative? What treatment?

CHARLES L. PHILLIPS, M.D., East Greenwich, R. I.

ANSWER.—There is evidence that Brucella organisms occasionally exhibit a predilection for the genital tract of human beings as in cows or bulls. Kristensen (*Ann. de méd.* **26**:339 [Nov.] 1929) isolated the abortus variety of the organism from the exudate, which covered the uterine site of the placenta of a seven months fetus. Carpenter and Boak (THE JOURNAL, April 11, 1931, p. 1212) recovered the organism from the tissues of a human fetus that was aborted at the end of the fourth month of gestation. Frei (*Schweiz. med. Wchnschr.* **59**:334 [March 23] 1929) isolated Brucella organisms from the vaginal discharge of a woman who had aborted ten days previously. Leavell, Poston and Amoss (THE JOURNAL, Sept. 20, 1930, p. 860) and Kristensen (*Ugesk. f. læger* **90**:869 [Sept. 6] 1928) have isolated pure Brucella cultures from infected ovarian cysts. Simpson (*Ann. Int. Med.* **4**:238 [Sept.] 1930) recovered Brucella abortus from a draining sinus tract which extended from the globus major of the epididymis through the scrotal wall. The organism has also been isolated from a tubo-ovarian abscess which developed as a late complication in a case of brucellosis (undulant fever). Orchitis and epididymitis are not infrequent early manifestations of the disease.

The intradermal test, utilizing heat-killed or formaldehyde-killed Brucella organisms, or the standardized Brucella nucleoprotein suspensoid ("brucin") developed by Huddleson, as antigen, is of value in identifying individuals who have acquired cutaneous sensitiveness after the invasion of the tissues by living Brucella organisms. The skin test is of value in the diagnosis of brucellosis, particularly in those persons (about 5 per cent) in whom no agglutinins for Brucella are found in the blood serum after repeated testing and in those instances in which Brucella cannot be grown on culture of the blood, urine or stools. The skin test is also of value in those cases in which the agglutination reaction is doubtfully positive in low titer (from 1:10 to 1:100). In interpreting the results of the endermic reaction, consideration must be given to the fact that presumably normal persons may develop cutaneous hypersensitiveness without symptoms of illness as the result of previous subclinical (asymptomatic) Brucella infection. Consideration must also be given to the fact that cutaneous sensitiveness remains after recovery from brucellosis. Thus, a person who has cutaneous hypersensitiveness to Brucella antigen may be suffering from some other disease at the time the test is made. A positive skin test may be merely the result of asymptomatic or symptomatic brucellosis acquired some months or years previously.

The opsonocytophagic test of Huddleson (*Am. J. Pub. Health* **23**:917 [Sept.] 1933) appears to be of considerable value in determining the immunity status of individuals who develop a

positive reaction to the skin test. The method involves the measuring of the phagocytic power of the polymorphonuclear leukocytes in an opsonocytophagic system. The absence of marked phagocytic activity of the polymorphonuclear leukocytes in a patient with a positive skin test is believed to indicate active infection due to Brucella organisms and a lack of immunity. The presence of marked phagocytic activity would indicate either a developing or an established immunity. If marked phagocytic activity and a positive skin test are demonstrated in a patient with fever, it is likely that the fever is due to some disease other than brucellosis. Keller, Pharris and Gaub (THE JOURNAL, Oct. 24, 1936, p. 1369) have reported favorably on the practicability of the opsonocytophagic test. In interpreting any of the tests for brucellosis, due regard must be given to the clinical symptomatology. If repeated agglutination tests are negative and if the intradermal test is negative, it is quite unlikely that the patient has or has had brucellosis.

Brucella melitensis vaccine (abortus, suis and melitensis variety), N. N. R. appears to exert a favorable influence in most cases of brucellosis. The vaccine is available through the usual trade sources. The vaccine may be used for the skin test by diluting 0.1 cc. of the vaccine with 0.4 cc. of sterile physiologic solution of sodium chloride. The intradermal test is made with 0.1 cc. of the diluted suspension, producing a wheal about 5 mm. in diameter. Dr. Lee Foshay of the Department of Bacteriology, University of Cincinnati, has developed an antiabortus serum, which is apparently effective during the first three months of the disease. I. F. Huddleson of Michigan State College, East Lansing, Mich., has utilized a bacteria-free broth filtrate of Brucella organisms, known as "brucellin," in the therapy of brucellosis, with apparently good results. Transfusions with blood from persons who have made a satisfactory recovery from brucellosis may be of benefit.

Prickman and Popp (*Proc. Staff Meet., Mayo Clin.* **11**:506 [Aug. 5] 1936) have reported favorable responses in refractory cases of brucellosis to artificial fever therapy.

CHRONIC SINUSITIS

To the Editor:—I have under my care a patient with chronic sinusitis, affecting particularly the antrums, of five years' duration. The patient has had repeated irrigations, with temporary relief. Now the question arises as to what procedure holds the best possible chance of permanent relief. I am anxious to know definitely whether breaking down the medial walls of the antrum to make permanent drainage openings is a wise procedure in this case, whether continued irrigations through a small opening only when absolutely necessary is better, or whether these sinuses should be left alone entirely. Please do not mention name.

M.D., New York.

ANSWER.—The treatment of chronic sinusitis is influenced by several factors. If the acute exacerbations are not increasing in frequency or severity, if severe headaches are not present, and the patient is in no great distress or incapacitated when he has an acute attack, it is often difficult to decide whether any operative procedure is indicated. If, on the other hand, symptoms and signs become more distressing, more frequent or even continuous, some operative procedure is needed. When it is the maxillary sinuses that are especially involved, the possibility of a dental origin of the infection must always be considered. It is advisable to have x-ray films made especially of the upper bicuspids and molars. It is the first and second molars and second bicuspids that lie in close proximity to the floor of the maxillary sinuses. A roentgenogram of the sinuses then would likewise be indicated in order to determine to what extent changes have occurred in the sinus, mucosa or bone. If there is suspicion of the presence of polypi, injection of some radiopaque substance should be done, and x-ray films made to see if there are any filling defects. If there are marked changes in the sinus mucosa and especially if polypoidal formation is present, irrigations of the sinuses will give only temporary relief or none at all. If considerable pus is present but no polyps, one of several operations may be performed, such as making a large opening into the antrum by way of the inferior meatus. This procedure followed by a number of irrigations may suffice. As a rule, if polypi are present irrigations are of no avail, and it is necessary to perform a radical operation. Perhaps the most commonly employed is the Luc-Caldwell. Here the antrum is entered through the canine fossa, a large opening made so that the whole antrum may be inspected, any polypi or diseased mucous membrane removed, and a large counter opening made into the nose by way of the inferior meatus either with or without formation of a flap of the mucous membrane. The buccal mucosa is closed with sutures after the antrum has been packed with gauze of one type or another, removable through the nose. Some operators insert large rubber tubing instead of gauze. The more radical Denker operation may be employed when the pathologic changes in the antrum are more extensive.

TREATMENT OF EDEMA IN CIRRHOSIS OF LIVER

To the Editor:—I have a case of cirrhosis of the liver with general anasarca and ascites. The patient is an alcoholic addict. Tapping, April 1, recovered a gallon of clear yellow fluid which on standing twenty-four hours assumed a greenish tinge (probably bile). May 8, tapping recovered 2 gallons of the same fluid. May 27, tapping recovered 2 gallons. The urine, May 22, contained 0.27 per cent of albumin, hyaline casts, a few red blood cells and a few white blood cells. The specific gravity was 1.025. Bile was present occasionally. His elimination is about 1 quart of urine a day and five bowel movements (small in amount). There is little or no perspiration. The blood chemistry is nearly normal except for a slight increase of blood sugar. About five years ago he had glycosuria and all the symptoms of diabetes. This cleared up by keeping his rum away from him. I concluded that his glycosuria was a toxic condition from alcohol. He also has a myocarditis as shown by dyspnea, irregular feeble pulse and considerable drop in blood pressure since I treated him. He has been incapacitated for work since January 8. I tap him only when pressure symptoms cause increased dyspnea. I should like to reduce the general edema of his skin. Diuretics, so far as I can see, keep his kidneys working but do not reduce the general edema. In view of the almost normal kidney function (as shown by blood chemistry) I have not restricted his diet very much, as attempts along this line have caused delirium and extreme weakness. Hot packs weaken him too much. In view of all this, would you suggest the use of salyrgan? I am a bit afraid to use it because of the heavy albumin. I did try half an ampule and he passed very little urine in twenty-four hours. Now with a little less albumin than formerly would you use the mercurials to promote diuresis? I am afraid of them in this case. How about you? How would you attempt to reduce the edema? Of course he had a few running sores where edema has been too much for his skin. Are any of the master clinicians using Southey tubes for the massive edema in these cases? I have never seen one used in my experience.

HENRY E. B. MEYER, M.D., Brooklyn.

ANSWER.—On theoretical consideration, the mercurial diuretics are used guardedly when there is a suspicion of renal damage. Actually they are used with excellent results in many cases of severe renal disease. In this case there seems to be no contraindication to the use of these agents. It has been found that the acid-base salts for three or four days preceding the mercurials greatly enhance their effect. Ammonium nitrate or ammonium chloride, in doses of from 6 to 8 Gm. a day, are recommended. A brisk saline purge on the second day following the mercurial is believed to reduce the possibility of mercurial enteritis. The use of Southey tubes or incision of the skin has been largely abandoned. The removal of edema in this case is certaintly to be desired and it is possible that the abdominal taps may be less frequently required. If the mercurial diuretic fails to produce the desired result it is not wise to repeat it until an interval of one or two weeks has passed by. With the majority of mercurials that are on the market, a dose of 2 cc. is considered the optimum.

TREATMENT OF AZOOSPERMIA

To the Editor:—For the past three months I have been treating a man of 41 for premature ejaculation and aspermia (proved on two tests). My therapy consisted of antuitrin-S injections (1.5 cc. three times a week) and later a preparation called Androstine (Ciba). The patient has a small penis and small testicles and has been suffering from grand mal attacks since the age of 18. Aside from the foregoing he is absolutely negative to physical examination and history. He becomes easily aroused sexually and ejaculates even while dancing with a female partner. Could you advise further investigation or methods of therapy? Are there any new forms of male sex hormone available? Please omit name.

M.D., New York.

ANSWER.—The inquirer probably means azoospermia, as aspermia means no ejaculation at all during coitus and therefore it is impossible to have both aspermia and premature ejaculation. The most frequent cause for premature ejaculation is excessive ungratified sexual excitement, such as spooning, indulged in either before marriage or thereafter. In these cases the prostate and prostatic urethra are so congested that the reflex act of ejaculation takes place with the beginning of coitus. This condition can be verified only by examining the prostate by rectum and the prostatic urethra by cysto-urethroscopy. The treatment is sextual rest and getting rid of the local congestions by prostatic massage and instillations of weak silver nitrate solutions (from 1:3,000 to 1:500) into the prostatic urethra with the Bangs sound syringe. Generally seven or eight such treatments get the parts normal. Some patients are well as soon as the local congestions are removed, and some, especially if the condition has lasted a long while, need

stimulating treatment for the weakened muscles. For this purpose the sinusoidal-faradic current is advisable.

The azoospermia, according to the history, is undoubtedly testicular in character. The therapy of this condition is entirely experimental and it is impossible as yet to recommend the use of special extracts for this purpose. Both positive and negative results have been reported with preparations of the gonadotropic principle of pregnancy urine, such as antuitrin-S. There is no evidence that androstine-Ciba could be of any use for this purpose; the Council on Pharmacy and Chemistry reported this product to be practically devoid of potency (THE JOURNAL, June 20, 1936, p. 2150). Favorable results have been reported with the use of a gonadotropic product from the pituitary itself; but even when azoospermia can be corrected the resultant spermia may be abnormal and lead to abnormal products of conception (Moench, G. L.: A Consideration of Some Aspects of Sterility, *Am. J. Obst. & Gynec.* **33**:406 [Sept.] 1936).

TAPEWORM INFESTATION DURING PREGNANCY

To the Editor:—Please advise me as to the treatment of tapeworm in a pregnant woman. A woman, aged 23, primipara, secundigravida, four months pregnant, has lost 3 pounds (1.4 Kg.) during the last month, although eating almost twice as much as normally, and during the previous months of her pregnancy she gained weight. The stools were of normal color although the bowels are very constipated and several times after enemas she has noticed broad white segments about one-fourth inch wide, varying in length from 3 to 4 inches. Without further examination I made a tentative diagnosis of tapeworm, most likely Taenia saginata or Taenia solium, as she gives no history of having eaten any fish all summer long. I requested her to bring in a stool for examination but as yet she has not done so; hence I cannot further substantiate my diagnosis. My problem is what treatment I should use to eradicate the worm if she continues to lose weight or becomes progressively anemic. Several of the textbooks that I have mention the fact that it should be treated conservatively during pregnancy. In THE JOURNAL, Sept. 1, 1934, in an article by Harold W. Brown entitled "Intestinal Parasitic Worms in the United States," it is stated that treatment with aspidium should be used with caution in pregnancy. He also mentions treatment with carbon tetrachloride but does not give pregnancy as a contraindication. Would this be the most acceptable form of treatment or would you recommend some other form? If printed, please omit name.

M.D., Minnesota.

ANSWER.—While aspidium and probably the other potent teniacides are contraindicated in pregnancy, pumpkin seed is not, as it is harmless in almost any dose. The seeds should, if possible, not be more than one month old. After the usual preparatory starvation the day before and the administration of a saline purgative the night preceding and again in the early morning, a very light breakfast may be taken. Two hours after this, one gives from 60 to 120 Gm. of pumpkin seed in three portions, two hours apart, the patient remaining in bed to avoid vomiting. The fresh seed should be beaten into a paste with water and finely powdered sugar, and water or milk added to make about 500 cc. If purgation does not occur within three hours after the last dose, a purgative—preferably castor oil—should be administered.

CONSTIPATION

To the Editor:—I should like to learn more of constipation and its management. I have the small book which you publish on cathartics but find this inadequate for the more obstinate cases. One patient is especially difficult, having been ill for a number of years and taken laxatives regularly during that time and has to take Empirin Compound frequently now because of pain. The liquid petrolatum preparations all cause so much distention that they cannot be used in his case. There seems to be a spastic condition in his colon and the bulk-providing laxatives are not effective. There is apparently no pathologic condition causing the constipation. It is due, I presume, to his inability to take exercise (his only exercise being walking a short distance each day), the long period of use of sedatives, and his highly nervous condition. None of these factors can be eliminated, and I should appreciate greatly any advice that you might be able to give, and any references you might give in which I could gain further information. Please omit name.

M.D., California.

ANSWER.—From the description it is reasonable to suppose that the patient is suffering from a condition of colon spasm in which irritative cathartics of all kinds are likely to make the condition worse. There are two problems to be solved: (1) to unlock the spasm and (2) to remove the cause.

In the symptomatic relief of the spasm, the use of oil is particularly indicated. When liquid petrolatum taken by mouth is not satisfactory, the use of oil enemas at bedtime is likely to be required. These consist of the patient injecting into the rectum, the last thing at night after he has gone to bed, as much warm olive oil as he can retain overnight. This usually is a cupful, more or less. Such enemas might be repeated every evening for several days until all hard lumps are eliminated from the stools and liquid petrolatum taken by mouth maintains a softness of scybala. In cases in which this combination is not satisfactory, daily teaspoonful doses of castor oil taken first thing in the morning have produced good results. While the patient is suffering pain due to the spasm, the employment of analgesics is advisable; but morphine must not be given. It is decidedly contraindicated in such cases. Bulk-providing diet is not tolerated at this stage, and a smooth, residue-poor diet is demanded. As this regimen is constipating and colon spasm is, after all, a variety of constipation, it is necessary to abandon this phase of treatment as soon as possible after the spasm has been satisfactorily relieved.

The removal of the cause is more difficult as well as more important. There are some cases in which the colon spasm is due to stasis in the proximal colon, which, in turn, is often dependent on minor organic abnormalities such as a low cecum or pericecal adhesions. In these cases, after the spasm has been unlocked, the use of mild saline catharsis coupled with the most bulk-producing diet that the patient can tolerate is likely to produce satisfactory results. Such a diet might include, for instance, the more delicate cellulose-containing vegetables, such as spinach, asparagus and cauliflower, and possibly bran. While such a diet is not tolerated during the presence of active colon spasm, it is a preventive of its recurrence when the spasm has been relieved.

Another cause of the spastic colon is, no doubt, intestinal allergy and this requires the use of the so-called elimination diets and possibly skin tests, by means of which one might be led to the discovery of the offending food or foods.

The psychoneurotic background accompanying any one of these states, which acts as a predisposing factor, also needs to be taken care of. This requires a personality study to discover the nature and cause of the patient's maladjustment and the prescribing, based on the results, of the proper hygiene for that individual.

ENDOCRINE DISTURBANCE

To the Editor:—A man, aged 33, a physician, was 5 feet 8 inches (173 cm.) tall and weighed between 185 and 190 pounds (about 85 Kg.) at puberty, which was fully established between the thirteenth and fourteenth years, and up until the age of 18. He appeared to be suffering from a pituitary dysfunction. During this period the breasts were quite large and the lower part of the abdomen and the hips and thighs were well padded with fat. At the age of 19 years there was a marked loss in weight of 50 or 60 pounds (about 25 Kg.) preceding the removal of a gallbladder full of stones. Since the cholecystectomy and the loss in weight the patient, when clad, has appeared to be normal in body contour. He has attained a height of 5 feet 9½ inches (175.5 cm.) and has been averaging during the past ten years from 155 to 160 pounds (about 71 Kg.) in weight but at times has weighed 175 pounds (79 Kg.). The tendency, however, at present and during the intervening years has been to deposit fat in the parts of the body already mentioned. The pelvis, though less wide than the shoulders, strongly suggests the female type. The genitalia are of average size and the sexual urge is normal. The basal metabolic rate for the past six or seven years has been low, minus 15 to minus 20, and the pulse from 60 to 64. The patient's chief complaint regarding this condition is that of embarrassment at the time of bathing and showering. Kindly advise the course of treatment I should follow in the case. Are there any undesirable effects that may follow the administration of antuitrin in this patient? If you should advise its use, please indicate the method of administration and its frequency. If published, please omit name and address.

M.D., Pennsylvania.

ANSWER.—It is difficult to say with certainty whether the patient represents an organic abnormality or simply a physiologic disturbance. Certainly the description does not suggest the diagnosis of Frölich's syndrome. Suggestions for treatment are difficult because of our inadequate knowledge of the underlying causes for such conditions. If we were certain that the cause is a deficiency of the gonadotropic factor of the anterior lobe of the pituitary we could recommend the use of one of the commercial products now available. The correspondent mentions "antuitrin" as a possible form of treatment. Presumably he refers to "antuitrin-S," a substance prepared from the urine of pregnant women which probably is formed by the chorionic villi and therefore is not of pituitary origin. Its action, however, is similar to the luteinizing fraction of the anterior lobe, and it has been given wider clinical use than any of the hormones obtained from pituitary tissue. Insufficient time has elapsed to say with certainty that no harm can result from its use, but harmful effects are unlikely. The size of the patient's prostate should be observed, and if a significant increase occurs the injections should be stopped. Whether the injections will produce any improvement is equally problematic. A suggested dosage would be 2 cc. (200 units) subcutaneously two or three times a week for from four to six weeks. The suggestion is made that some such cases improve with the use of thyroid. Sufficient should be given to maintain the basal metabolic rate between zero and minus ten.

If neither form of treatment produces improvement, the patient should be reassured that after all the condition is more damaging to the ego than it is damaging to health and that bathing in private is still practiced by a few more sensitive individuals. The normality of the genitalia and "sexual urge" should more than compensate for abnormal fat deposits.

ANGIONEUROTIC EDEMA AFTER SEXUAL INTERCOURSE

To the Editor:—A married man, aged 40, has noticed in the past year that, following intercourse, a moderate, symmetrical swelling of both hands appears. This swelling is noninflammatory, pits on pressure and is not painful. It persists from five to seven days. Edema is absent in other dependent parts of the body. Points in his past history include a gonorrheal infection ten years ago, more recently a peptic ulcer, which responded well to treatment, and occasional exacerbations of a chronic sinus infection. It seemed to me at first that this was evidence of cardiac insufficiency, though physical examination of the heart did not support this contention. Moreover, the edema persisted in spite of complete digitalization. There are no significant phenomena manifest in the head and neck. The blood pressure is 118 systolic, 72 diastolic, the lungs are clear, and the abdomen, external genitalia, prostate, other extremities, skin and reflexes are normal. The urine is normal, the hemoglobin is 96 per cent, erythrocytes are 4,900,000, leukocytes number 7,200, the differential count is normal, and the Wassermann and Kahn reactions are negative. Please omit name if published.

M.D., Ohio.

ANSWER.—The brief history given suggests the possibility of angioneurotic edema as a cause for the swellings. No mention is made as to whether the penis is involved in these swellings. The treatment consists in a search for the causes of the condition. The many factors to be considered are:

1. Emotional disturbances may be either a primary cause of angioneurotic edema or may act as a predisposing cause in the presence of other etiologic factors.

2. Autosensitization to semen has been reported by W. L. Cooper (*J. Pediat.* 7:179 [Aug.] 1935). Such sensitization seems improbable in spite of this one report.

3. Asthma and dermatitis occurring during intercourse or apparently related to it have been traced by Vaughan and Fawlkes (THE JOURNAL, Sept. 21, 1935, p. 955), to specific sensitization to such substances as orris root, silk, rubber and contraceptives. Rattner and Pusey (THE JOURNAL, Dec. 3, 1934, p. 1934), reported an interesting case of dermatitis due to perfume. A search of such contact possibilities that may occur during cohabitation (flaxseed in hair setting materials, perfumes), which may be used by either person, may prove helpful. In the Vaughan and Fawlkes article, physical allergy due to effort and heat during coitus is mentioned as a possible factor for the attack. This, however, may be ruled out if other forms of exertion fail to produce the swellings.

4. A focus of infection has been considered as a cause for angioneurotic edema. The history of a gonorrheal infection suggests the possibility of a chronic prostatitis. Examination for this possibility and suitable treatment, if present, should be one of the first steps to be made in this case.

OBSCURE PROSTATIC DISORDER

To the Editor:—This question has to do with a prostatic disorder of apparently confirmed tuberculous origin. The patient has frequency, urgency and nocturia, but no hemorrhage in the urine has been observed. There is a history of tuberculosis of the chest fifty years ago. He is now 78 years of age. His blood pressure is 140 systolic, 80 diastolic, temperature 98 F., pulse 76, respiration 18, weight 140 pounds (63.5 Kg.). His chest is negative on physical and x-ray examination. The prostate is slightly nodular and slightly enlarged, the middle lobe more so than the lateral lobes. X-ray examination of the pelvis shows no metatastic involvement. The prostatic smear is negative. What is the best supportive treatment he can be given? I have advised against surgery. The blood Wassermann and Kahn reactions are negative.

M.D., Pennsylvania.

ANSWER.—Active tuberculosis of the prostate gland without tuberculosis elsewhere in the genito-urinary tract would be exceedingly rare. If the condition is tuberculous, the existence of coincident tuberculosis in the kidneys or bladder would be necessary to cause the symptoms described. There are many other lesions in the urinary tract that might cause similar symptoms, such as tumor or diverticulum in the bladder, and any of the various forms of pyelonephritis and cystitis. Nodular changes in the prostate gland with enlargement may accompany any form of prostatic disorder.

The correspondent does not state whether the patient has any residual urine in the bladder. The bladder is sometimes found to be obstructed without symptoms of urinary difficulty. If there is obstruction caused by the prostate gland it would probably be due to hyperplasia, with or without secondary infection, rather than to tuberculosis. Chronic prostatitis, with or without stones, may be present even though the first prostatic smear is negative and may also cause the clinical data described. The possibility of carcinoma is not excluded, even though the roentgenograms show no evidence of metastasis. If cystoscopic examination reveals obstructing prostatic tissue, transurethral resection may be indicated.

In order to make an exact diagnosis it would be necessary to make a careful study of the urine, including gram stains, stains for the bacillus of tuberculosis and cultures of the urine, and possibly inoculation of guinea-pigs. In addition, cystoscopy as well as roentgenographic and urographic studies of the urinary tract are essential.

VENEREAL VEGETATIONS

To the Editor:—For the past ten weeks I have had under treatment a 20 year old youth with venereal vegetations. He is a delivery clerk for a grocery. His general health has always been good. The foreskin is not long or tight; in fact, the foreskin is shorter than the average. He has never had a gonococcic infection. Before he came to me, another physician had removed the vegetations several times with nitric acid, but they returned each time. I have repeatedly removed the growths with trichloroacetic acid and have used various dusting powders, principally thymol iodide. The vegetations come off nicely in a few days, without giving more than a trifle of discomfort, but in about ten days they return. This has occurred repeatedly; consequently the young man is much discouraged. Can you suggest any effective treatment? Kindly omit name and address.

M.D., Kansas.

ANSWER.—These vegetations should be removed by fulguration with the high frequency current. Even though the foreskin is neither long nor tight, secretions from under it may be the cause of the recurrences. Circumcision may prevent further recurrence.

CORONARY OCCLUSION

To the Editor:—A white man, aged 64, was suddenly seized with an attack consisting of dyspnea, weakness, dizziness and extreme anxiety. He was cyanotic and had a weak, thready pulse extremely variable in volume. There was no pain in his chest, but he did express a sensation of tightness. He has mild untreated diabetes and the blood pressure is 220 systolic, 110 diastolic. He also states that he has had trouble a great deal from time to time with a cough of the hacking type, with an occasional production of thick mucus, which he attributes to chronic bronchitis. There is also a history of some degree of albuminuria. He is a heavy smoker, using from four to six cigars a day, with some additional pipe smoking. Previous to his attack his pulse rate was about 62 beats a minute. His heart is enlarged to the left about 4 cm. beyond the nipple line and there is a slight enlargement to the right. There are no murmurs, and the tones are those which would be expected in one with a hypertension. Examination of the chest reveals a few moist rales at the bases of both lungs. There is some pitting edema of the ankles. Treatment consisted of absolute rest in bed and morphine sulfate one-eighth grain (0.008 Gm.) every four hours for relief of dyspnea. During the first thirty-six hours no relief was noted. There was a drop in the blood pressure to 162/100, but the pulse remained weak and rapid. Partial coronary occlusion was suspected in spite of the absence of pain, but the patient stated that he had previous attacks of this type even several years earlier, which were diagnosed as asthmatic. He was given 3 minims (0.18 cc.) of epinephrine hydrochloride 1:1,000 the third day, but instead of being relieved he was seized with a sharp pain in the region of the right pectoralis muscle, and the dyspnea was greatly increased; in fact, the whole syndrome was greatly accentuated and remained so for about thirty minutes, when he was allowed to inhale amyl nitrite, with almost immediate relief from his suffering. Following this he was put on theophylline with ethylene diamine, 1½ grains (0.08 Gm.) six times daily, and continued to improve until, five weeks later, he refused to remain in bed any longer, at which time he began to return to look after his business, spending a few hours each day at his office. While he is not quite as well as he was while in bed, he states that he feels much better than he had previous to his attack. Would a diagnosis of partial coronary occlusion seem logical? What else might cause the same syndrome? Please omit name.

M.D., Minnesota.

ANSWER.—A diagnosis of coronary occlusion not only seems logical in this case but is the most likely condition that would produce this picture. The setting for a coronary occlusion is an excellent one. A diabetic patient with hypertensive heart disease and a mild cardiac insufficiency is an excellent subject for such an accident. The resulting pain is not always severe and the sensation of tightness in the chest is quite as good a diagnostic point as pain. All the other symptoms mentioned form an almost perfect picture of coronary occlusion. If, in addition to the symptoms mentioned, there could be added an elevation of temperature, an elevation of the leukocyte count and a pericardial friction rub, nothing would be lacking.

The reproduction of the syndrome after the administration of epinephrine is confirmatory evidence. This drug has been used as a diagnostic agent to produce attacks of angina pectoris. Its use in this way has been abandoned because of the danger connected with it.

Another possible source of the attack might lie in the sudden onset of an abnormal cardiac rhythm. A paroxysmal auricular tachycardia or fibrillation might produce a similar picture. As a rule, however, the arrhythmia can be definitely recognized if it persists or the symptoms rapidly disappear when the rhythm returns to normal.

Abnormal cardiac rhythm is not infrequently the sequel of coronary occlusion, so, all things considered, the diagnosis of coronary occlusion is the safest one to make in this instance.

OPHTHALMOPLEGIC MIGRAINE

To the Editor:—A strong, healthy man, now aged 23, has had three attacks of diplopia, the first when 15 years of age. The attacks all commence with a severe headache at the vertex, which lasts only a day or two, followed in twenty-four hours with diplopia, the muscle involved being always the right internal rectus, and there is no obvious squint. Diplopia in the first attack lasted eight weeks, in the second ten weeks, and in the present so far twelve weeks. His general health at present and in between the previous attacks has been perfect. There is no other abnormal neurologic change. The basal metabolic rate and the cerebrospinal fluid Wassermann reaction are negative. The fields of vision are normal and the skull roentgenogram is normal. Disseminated sclerosis seems to be ruled out by the headache. Can this be a leaking aneurysm? Please omit name.

M.D., England.

Answer.—The clinical description sounds like that of a true ophthalmoplegic migraine, a clinical entity that has been well known since 1877. There is the first stage of pain, which in this case is a vertex headache, followed immediately by the ocular paralysis of one branch of the third nerve. This phase may disappear in from one to six months or it may become permanent. Almost nothing has been added to our knowledge of the subject since the description that appeared on page 712 of "The Eye and the Nervous System," by Posey and Spiller.

BULIMIA—INSATIABLE APPETITE

To the Editor:—A white woman, aged 34, complains of insatiable hunger. This condition has existed for a period of two years. Prior to the onset of this condition, she had had an appendectomy and a right oophorectomy. Following this she first noticed constipation, and shortly afterward the insatiable hunger developed. This symptom became so pronounced at times that she has eaten as much as 6 quarts of cooked vegetables along with eighteen apples and thirty-eight graham crackers, in addition to cereal, bread and butter, milk and other food in one day. In January 1936, when I first saw her, there was no evidence of hyperthyroidism. The blood sugar was 89 mg. and the nonprotein nitrogen 35 mg. per hundred cubic centimeters, which ruled out a hyperinsulinism with a hypoglycemia. There were no intestinal parasites and not an excessive amount of undigested food in the stools. Gastric analysis showed a free hydrochloric acid of 72 per cent and total acidity 96 per cent. A barium sulfate meal showed no deformity of the stomach or duodenum. The stomach was of normal size and position and fairly normal tone and peristalsis. The colon was fairly normal. The transverse colon dipped down into the pelvis but the flexures are held up well in position. Other laboratory studies reveal a normal blood count, urinalysis negative and blood Wassermann reaction negative. Following a complete study the patient was placed on extract of belladonna one-sixth grain (0.01 Gm.) and a bland diet. Under this regimen she noted some improvement, but this continued for only about a month. In April 1936 the patient complained of marked constipation, tenesmus at stool and passing of large quantities of mucus. At this time attention was directed toward relieving the mucus by means of colonic irrigations. These have been continued over a period of four months. The mucus is relieved by the irrigations but the insatiable hunger persists. Attempt to control this by sedation and alkalis has been unsuccessful. I am at a loss to know what to attempt to do further for this patient and will be pleased to have any suggestions for future treatment. Please omit name.

M.D., Wisconsin.

Answer.—This patient obviously has what the Greeks called bulimia. A good review of the ancient literature on the subject can be found in an article by Baumann in Janus for September and October 1935. In making a diagnosis, one would want to know more of the mental status of the patient. Extreme forms of bulimia have been encountered in the psychopathic or the hysterical or the definitely insane. It would have been helpful to know if the patient is gaining rapidly in weight on the excessive intake of food. One would like to have one or more estimations of the basal metabolic rate, because bulimia is seen occasionally with an exophthalmic goiter so atypical as to be missed clinically. Perhaps the patient has a peculiar build or a male distribution of body hair or other signs of some disturbance in the functions of the ovary or of the pituitary gland. It is conceivable that some change in the pituitary gland secondary to the removal of the ovary has upset the hunger mechanism much as it appears to upset the thirst mechanism in diabetes insipidus. With the removal of the ovary was there much change in the menstruation suggesting a premature menopause? Because of the sequence of events, one would seek for the cause first in some disturbance in the glands of internal secretion. In some cases of peptic ulcer with high acid such as this woman has, the patient is accused of eating too much when really her trouble is that she wants to eat every few hours. This woman's story is not that of ulcer. Diabetes has been ruled out and hyperinsulinism generally presents another type of syndrome. Further investigation for intestinal parasites should be made. The possible presence of protozoa, which are often extremely difficult to detect, should also be ruled out.

Certainly a story such as this is extremely uncommon and in making a diagnosis the physician can expect little help from the literature. One might try large doses of ovarian extract and as a long shot one might try the aminopyrine and solution of posterior pituitary that work such miracles in diabetes insipidus.

CODEINE ADDICTION—EFFECTS OF CODEINE ON MENTALITY

To the Editor:—1. Is codeine generally considered a habit-forming drug? 2. Would codeine over a period of one or two years in doses of 1 to 2 grains (from 0.0065 to 0.13 Gm.) given at bedtime for sleep in an old case of hypertension with a history of three attacks of hemiplegia be indicated or contraindicated, and would it in any way affect the mentality of such a patient (a woman, aged 78)? She had previously been given phenobarbital, but after a time that became ineffective and caused a so-called hangover the next day. The patient was under my continuous professional care for the past fifteen years and she recently died. The will, which was made about six months ago, is being contested, one of the points of those contesting the will being that codeine is a habit-forming drug, is contraindicated in hypertensive cases and so had affected her recovering, and the last will and testimony was influenced by it. Please omit name.

M.D., California.

Answer.—1. Codeine is less likely to produce habit than is morphine. Codeine addiction is rare and generally is easily broken.

2. It is not contraindicated. It has little or no effect on the heart or blood pressure. Its use may have been indicated in this case. The fact that it was effective for a year or more without increasing the dose speaks against habit—in the sense of morphine habit. We know of no acceptable evidence showing that codeine as used in this case influences mentality. It has been used habitually, from 0.065 to 0.2 Gm. (1 to 3 grains) each night for long periods, and its use discontinued with no more discomfort than follows the disuse of other sedatives such as the barbiturates.

HYPOPITUITARISM—FRÖHLICH'S SYNDROME

To the Editor:—A white boy, aged 12 years, has a definite Fröhlich syndrome. This diagnosis has been confirmed by several of the most eminent clinicians in this part of the country. There is no evidence of a pituitary tumor. I would appreciate any suggestions you might have to offer as to therapy in this case. Please specify the type of glandular extract indicated, the amount to be given at each dose, the time interval between doses and for approximately how long such therapy should be continued. I know that treatment for this disorder at the present time is not definite, but I feel that the patient at least deserves the benefit of a trial of some of the newer glandular preparations. Please omit name.

M.D., Tennessee.

Answer.—At the present time it is certain that Fröhlich's syndrome is a hypopituitarism associated with a hypofunction of either the testicles or the ovaries. The following experimental regimen is suggested: 1. Prephysin (said to contain the follicle-stimulating principle of the pituitary gland) injected hypodermically three times a week in 1 or 2 cc. doses. 2. Thyroid, 0.03 Gm., from two to three times daily for three months. 3. Minute amounts of dried posterior pituitary powder used as a snuff. This may be used twice daily. The patient may quickly learn to regulate this dosage to the minimum necessary amount and frequency. The foregoing should be continued for at least ten to twelve weeks. In the meantime the patient should frequently be reexamined to determine the development of any definite changes such as loss in weight decrease in amount of urine, and increased basal metabolic rate. Each individual case requires a careful checking period to determine the exact amount of medication that is necessary to effect changes.

PAIN IN CHRONIC LEG ULCER

To the Editor:—What can you suggest to relieve persistent local pain in a small chronic varicose leg ulcer in a barber, aged 63, which is slowly healing under rest and topical local applications? Do not publish my name.

M.D., Pennsylvania.

Answer.—Intractable pain in a slowly healing chronic leg ulcer may be due to (1) deficient arterial circulation, (2) inflammatory exudate around the ulcer with indurated elevated margins, (3) topical application of various irritating substances, which often do more harm than good, and (4) neuroma forma-

tion under the base or margins of the indurated area. If the arterial pulsations are palpable, if proper elevation and continuous hot boric acid dressings do not relieve the pain, a crushing of the posterior tibial and saphenous nerves can be done through a small incision, 5 or 6 inches above the ankle. Should the ulcer be above or around the external malleolus, the superficial and deep peroneal nerves can be crushed. This procedure requires a skilful surgeon with experience in such operations.

HABITUAL ASTHMATIC ATTACKS

To the Editor:—A patient of mine who is subject seasonally to hay fever and asthma during the grass season period (May and June) has this year had severe attacks of asthma, especially at night, necessitating the administration of 10 minims (0.6 cc.) of epinephrine hypodermically to obtain relief. I instructed the patient how to administer the drug hypodermically and informed her to use it only during the severe attacks at night. The patient informs me that she still gets attacks at night. Although she has no wheezing or noise in her chest she gets attacks of shortness of breath at about 3 a. m., which is relieved only by hypodermic administration of epinephrine. She is entirely free from attacks of shortness of breath in the daytime. She commenced to use the drug June 29 and is still continuing to use it once at night up to the present time. Is it possible that she developed the epinephrine habit? Is there such a susceptibility to the drug? Please advise me what I can do to break the habit of this patient from the epinephrine injections. Please omit name.

M.D., Pennsylvania.

ANSWER.—It is obvious that the patient has a habit, though it is probably not an epinephrine habit. It is reasonable to suppose that there is some unbalance of the autonomic nervous system, produced at that particular time by some physiologic process, possibly one taking place in the digestive system. It is probable that ephedrine taken by mouth the last thing at night might prevent this 3 a. m. occurrence. Owing to its insomnia-producing tendency, the ephedrine should be combined with phenobarbital, in the following prescription:

℞ Ephedrine sulfate 0.30
Phenobarbital 0.60
M. and div. into 10 capsules.
Label: One at bedtime and repeat once or twice if required.

The patient would then, of course, have to be weaned of the necessity of taking these capsules, which might be done possibly by progressive reduction of dosage in subsequent prescriptions. This should be easily possible if the cause for the allergic reaction has meantime been discovered and eliminated.

OSTEOMYELITIS OF STERNUM

To the Editor:—Late last February I did a whole thickness skin graft for a third degree burn over the upper part of the sternum on a young girl. This was only partially successful, as the upper part of the graft was lost as the result of infection. Two weeks ago she began to complain of pain and tenderness in this area. There is no fever nor is there any swelling about the area, which has been healed for nearly six months. I do not understand the reason for this pain and tenderness and can find nothing that covers this subject in the literature that is available. Could you give me any information as to the reason for this condition and what may be done to give relief from pain? Please omit name.

M.D., New York.

ANSWER.—It is difficult to give an explanation of the symptoms in this case from the facts as given. One would have to think of the possibility of a low grade osteomyelitis of the sternum. If the bone was uncovered as a result of the original injury, low grade infection might develop and go on to bone destruction even after a considerable interval of time and after the surface wound was healed. A stereoscopic x-ray examination would be of value.

TREATMENT OF UNDESCENDED TESTICLE

To the Editor:—What is the proper treatment for undescended testicle in a youth of 10 years? There is a fulness in the inguinal canal on the right side that is not present on the left. However, a definite testis is not palpable. The descended testicle and penis are smaller than normal. Is the medical treatment of this condition with the pituitary hormones effective? If so, which one would be most satisfactory? At what age should operation be considered?

LEO SCHWARTZ, M.D., New York.

ANSWER.—Operation, if performed by one experienced in surgery of this type, is the most certain procedure for obtaining a good result in a child of 10 years with undescended testicle. Treatment with gonadotropic extract of pregnancy urine should be given a trial and if the results are unsatisfactory, surgery can be resorted to. Two well known preparations for the medical treatment of undescended testes are antuitrin-S (Parke, Davis & Co.) and follutein (E. R. Squibb & Sons). The optimal time for operation is prior to puberty; however, it may be performed at a later date.

OXYGEN-CARBON DIOXIDE IN PNEUMONIA

To the Editor:—Is it permissible or advisable to use oxygen 95 per cent and carbon dioxide 5 per cent in an oxygen tent in cases of respiratory embarrassment? Would the use of this mixture through an oxygen tent over a period of time have a tendency to injure the patient? Also advise whether this oxygen-carbon dioxide mixture is suitable to use with a pulmotor in case of respiratory embarrassment.

M.D., Georgia.

ANSWER.—In the treatment of pneumonia a mixture of 95 per cent oxygen and 5 per cent carbon dioxide may be used for short periods. But for continuous use oxygen alone at flows sufficient to maintain an atmosphere of 50 or 60 per cent of oxygen in the tent is believed to be best. In this atmosphere the carbon dioxide from the patient's exhaled air may without harm, and even with advantage, be allowed to rise to 2 or 3 per cent. For purposes of resuscitation from asphyxia, drowning or electrical shock the mixture of oxygen and carbon dioxide should be administered by means of an inhalator. A mixture containing 7 or 8 per cent of carbon dioxide is more effective than one of only 5 per cent. Such mechanical devices as the pulmotor are unsound and unphysiologic.

SEROUS EXUDATE IN APPENDICITIS

To the Editor:—I have found twice during my experience of thirty-two years, while operating for appendicitis, free, almost colorless fluid in the abdomen, perhaps not exceeding a liter in amount. One patient was a girl, aged 12 years, and the other a woman, aged 25, both otherwise healthy. The appendix in each case was just slightly congested and a trifle swollen. One was free in the abdominal cavity and the other was adherent to the mesentery. I have no explanation for this condition and can hardly explain it on the basis of allergy. I would greatly appreciate your opinion.

G. L. GABLER, M.D., Holyoke, Mass.

ANSWER.—In view of the existence of acute appendicitis in both cases, the increased fluid in the peritoneal cavity most likely was a serous exudate from the inflammatory reaction in the peritoneal covering of the appendix and perhaps elsewhere.

GENEVA OPHTHALMOSCOPE AND RETINOSCOPE

To the Editor:—Please give me complete details on the Geneva ophthalmoscope and retinoscope, as to design and practicability.

R. N. MONFORT, M.D., Onaway, Mich.

ANSWER.—The Geneva ophthalmoscope and retinoscope was devised many years ago by Dr. E. J. Brown of Chicago and was manufactured by the Geneva Optical Company, which is now defunct. A complete description of the instrument can be found on pages 142-143 of the catalogue of the Geneva Optical Company that was published in August 1922. As an ophthalmoscope, the instrument left much to be desired for there was a great deal of spherical aberration and only the posterior pole of the eye could be examined. It lacked flexibility. The retinoscope phase of the instrument was rather complicated and unwieldy and lacked accuracy.

RELATION BETWEEN BLOOD AGGLUTINATION TEST IN TYPHOID AND MALTA FEVER

To the Editor:—I should like to know whether there is any relation in the blood agglutination tests between typhoid and Malta fever. I have had at least two patients who have had positive Malta blood agglutination and after four weeks of treatment with metaphen intravenously twice a week and nonspecific protein the tests have returned positive for typhoid. Please omit name.

M.D., Texas.

ANSWER.—So far as is known there is no immunologic or antigenic relation between the typhoid bacillus and Brucella abortus, the organism that causes Malta or undulant fever. It would be of interest to know the exact composition of the nonspecific protein used in the treatment of the patients; also whether the patients ever had typhoid or had been injected with typhoid vaccine.

DEVICE FOR LOOSENING STUCK SYRINGES

To the Editor:—Will you please give me the name and description of any device that is available to use for loosening stuck syringes? Please omit name.

M.D., Illinois.

ANSWER.—In addition to the method described by Dr. J. B. Hopkins in his letter to the editor in THE JOURNAL, February 6, page 492, there is a device known as the Plung-Ejector, which is used to loosen stuck syringes. A new model of the Plung-Ejector having several improvements over the old model has only recently come on the market. The new model is made with a rubber collar which tightly clamps the tip of the syringe

to be loosened, and it has an all metal plunger, which should extend its usefulness over a long period of time. To use this device, it is held in the right hand and the locking collar is turned to the right until it is fully extended. Then it is filled with water by withdrawing the piston, and the frozen syringe is then placed as far as it will go into the rubber collar, after which the locking collar is turned tightly to the right. Pressure is then applied and the frozen plunger is loosened.

TREATMENT OF ANEURYSM

To the Editor:—I have a patient with an aneurysm of the arch of the aorta. It is quite obvious on his chest wall. I have explained to him that it is not amenable to surgical treatment. I will appreciate it if you will inform me if there is any recent surgical procedure which will benefit him.

PHILIP S. JOSEPH, M.D., Alice, Texas.

ANSWER.—No, there is no recent surgical treatment of value for aneurysm of the arch of the aorta.

HYPERPYREXIA IN TREATMENT OF SYPHILIS

To the Editor:—In Queries and Minor Notes in THE JOURNAL, January 9, M.D., California, writes of hyperpyrexia in the treatment of a case of syphilis resulting in the death of his patient.

From my experience in the treatment of a large series of cases with physically induced elevation of systemic temperature, and from the data contained in this communication, I feel that it is necessary to call attention to the following facts:

1. A mouth temperature of 106 F. is extremely dangerous because, while in the grand average of cases the systemic temperature as measured by rectal thermometer may be within 1 degree F. elevation beyond the mouth temperature, it not infrequently happens in an individual case that the rectal temperature may be as high as 2 degrees F. above that indicated in the mouth. Mouth temperatures must be taken very carefully because of the cooling effect of liquids ingested by the patient and because of the cooling effect of the air passing in and out of the respiratory tract. In other words, this patient's temperature may have been 108 F. or even higher by rectum. One-fourth grain (0.016 Gm.) of morphine sulfate was administered hypodermically after the patient's mouth temperature had been elevated to 106 F. There is no notation of temperature during the next thirty-five minutes. An increase in the temperature following the administration of morphine is usually observed unless steps are taken to increase heat loss or to diminish the amount of heat applied. It is also of interest to note that the pulse rate, which at 10:45, when the mouth temperature was 104.4 F., was 140 beats per minute, at 11:10, when the mouth temperature had risen to 106 F., diminished to 104 beats per minute.

2. In the narration of the management of the case, reference is made to the fact that a technician was left in charge of the case at these temperatures. The communication states that "stimulation was applied as much as a technician could apply." In my opinion it is imperative that a physician who is specially trained in the administration of physically induced temperature elevation be continuously present during treatment and until the temperature is permitted to recede to below 104 F. or, better still, to below 103 F. (rectal temperature). This is a major procedure wherein the development of changes leading to death may occur within a few minutes. This makes it necessary to observe the systemic temperature at frequent intervals—at least every ten minutes or, preferably, continuously by means of the special registering instrument available for the purpose. This instrument as well as clinical thermometers must be frequently checked because so much reliance is placed on the absolute fact of the temperature observed. The physician in attendance should also be prepared to administer emergency measures to forestall a fatal termination. It is hardly just to the technician to expect him or her to be possessed of all the necessary medical background as well as the exact information so as to be able to act in such emergencies. Certainly it does not appear to be just to the patient.

If patients are to continue to receive treatment such as that described and under the circumstances mentioned, one may reasonably expect an increasing number of deaths due to the exceedingly high temperatures employed rather than to any special peculiarities in the reactions of the patient. A therapeutic procedure that is showing much promise in the treatment of important diseases may well come to be thrown into the discard because of the lack of care used in its administration.

WILLIAM BIERMAN, M.D., New York.

HEIGHT-WEIGHT-AGE FORMULA

To the Editor:—Relative to the question asked by a New York physician in THE JOURNAL, January 16, page 227, regarding determination of normal weight when only age and height are known, I had a formula given me several years ago by an assistant medical director of an insurance company that for all practical purposes conforms to the usual "standard weight" tables issued by insurance companies. This formula is as follows: Multiply the number of inches above 5 feet by 5½ and add 110. This applies for adults from 18 or 20 to 35, and above 35 add 10 pounds. Thus for a person 25 years of age and 70 inches in height, 10 times 5½ plus 110 equals 165 pounds. Above 35 the addition of 10 pounds, 175. I found this formula to be of practical benefit in many insurance examinations during the time I was engaged in the practice of medicine, and while it is true that no "normal weight" is known, it will perhaps serve the inquirer for practical purposes.

MILTON THARP, M.D., Nashville, Tenn.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, April 6-7. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Medical (Regular).* Little Rock, May 11-12. Sec., Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, May 11. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Reciprocity.* San Francisco, March 3. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, April 6. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: Hartford, March 9-10. *Endorsement,* Hartford, March 23. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 28-29 (probable dates). *Medical.* Washington, July 12-13. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, April 6-8. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 22-24. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, 301 State House, Indianapolis.

IOWA: *Basic Science,* Des Moines, April 13. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

KENTUCKY: Louisville, June 9-11. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, June 15-18. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 9-11. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, April 6-7. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 20-22. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 28-July 1. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 21. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 6-9. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OKLAHOMA: Oklahoma City, June 9-10. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science.* Portland, March 20. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene. *Medical.* Portland, June 15-17. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 6-10. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, April 1-2. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Rapid City, July 20-21. Dir., Division of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

VIRGINIA: Richmond, June 17-19. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science:* Madison, April 3. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Milwaukee, June 29-July 2. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, February 13, page 582.

Kansas December Report

Dr. C. H. Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Dec. 8-9, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, all

of whom passed. Eleven physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists		(1936)	1
University of Illinois College of Medicine		(1935)	1
University of Kansas School of Medicine		(1936)	1
Tulane University of Louisiana School of Medicine		(1935)	1
University of Oklahoma School of Medicine		(1932)	1
University of Pennsylvania School of Medicine		(1935)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1925), (1926)	Illinois, (1930) Wisconsin
Rush Medical College		(1935)	Illinois
Louisiana State University Medical Center		(1936)	Louisiana
St. Louis University School of Medicine		(1934)	Missouri
University of Oklahoma School of Medicine		(1923), (1934)	Oklahoma
Temple University School of Medicine		(1918)	W. Virginia
University of Texas School of Medicine		(1933)	Texas
University of Wisconsin Medical School		(1930)	Missouri

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Columbia Univ. College of Physicians and Surgeons		(1933)	N.B.M.Ex.

Illinois October Examinations

Mr. Homer J. Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, Oct. 20-22, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1936)	82
Chicago Medical School		(1932) 82, (1936) 80, 81, 82, 82, 82, 83, 84, 84, 84, 84, 85, 86, 86	78,
Loyola University School of Medicine		(1933) 84, (1936) 85, 86	80,
Northwestern University Medical School		(1935) (1936) 82, 83, 84, 84, 85,* 85, 85, 85, 85, 85, 86,* 86, 89	82,
Rush Medical College		(1934) 85, (1936) 81, 84, 84, 84, 84, 85,* 85,* 85, 85, 85, 86, 87	84,
School of Medicine of the Division of the Biological Sciences		(1935) 85, (1936) 83, 85, 85	85,
University of Illinois College of Medicine		(1935) (1936) 82, 84, 85, 85, 86, 86, 86, 86, 88, 88, 89	85,
State University of Iowa College of Medicine		(1932)	85
University of Louisville School of Medicine		(1934)	87
University of Michigan Medical School		(1932) (1935) 84, 85	84,
Columbia University College of Physicians and Surgeons		(1928)	84
University of Oklahoma School of Medicine		(1935)	85
Meharry Medical College		(1935)	84
Vanderbilt University School of Medicine		(1933)	86
University of Manitoba Faculty of Medicine		(1925)	79
University of Toronto Faculty of Medicine		(1934)	85
McGill University Faculty of Medicine		(1934)	82
Deutsche Universität Medizinische Fakultät, Prag		(1935)	80†
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1920)	84†

Thirty-four physicians were successful in the practical examination held in Chicago, October 22, for reciprocity and endorsement applicants. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1933)	Dist. Colum.
Northwestern University Medical School		(1931) Wis., (1935)*	Colorado
State University of Iowa College of Medicine		(1928)	Iowa
University of Louisville School of Medicine		(1930)	Kentucky
Tulane University of Louisiana School of Medicine		(1933) (1935) Louisiana	Maryland,
University of Michigan Medical School		(1928)*	Michigan
University of Minnesota Med. School		(1920), (1931), (1933)*	Minnesota
St. Louis University School of Medicine		(1935)	Missouri
Washington Univ. School of Medicine		(1916),* (1935)	Missouri
University of Nebraska College of Medicine		(1935, 2)	Nebraska
New York Homeopathic Medical College and Flower Hospital		(1932)	California
University of Oklahoma School of Medicine		(1932)	Oklahoma
Jefferson Medical College of Philadelphia		(1917)	New Jersey
University of Pittsburgh School of Medicine		(1929)	Penna.
University of Tennessee College of Medicine		(1935)	Tennessee
Vanderbilt University School of Medicine		(1932)	Louisiana

School	PASSED	Year Grad.	Endorsement of
George Washington University School of Medicine		(1935)	N.B.M.Ex.
Howard University College of Medicine		(1934)*	N.B.M.Ex.
Rush Medical College		(1933)	N.B.M.Ex.
School of Medicine of the Division of the Biological Sciences		(1934)	N.B.M.Ex.
University of Louisville School of Medicine		(1934)*	N.B.M.Ex.
Harvard University Medical School		(1930), (1931), (1934)	N.B.M.Ex.
University of Michigan Medical School		(1933)	N.B.M.Ex.
University of Minnesota Medical School		(1934)	N.B.M.Ex.
University of Pennsylvania School of Medicine		(1934)	N.B.M.Ex.
University of Montreal Faculty of Medicine		(1934)	N.B.M.Ex.

* License has not been issued.
† Verification of graduation in process.

New York Endorsement Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports 516 physicians licensed by endorsement from Jan. 1 through Nov. 18, 1936. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine		(1927) (1934)	Arkansas, N. B. M. Ex.
College of Medical Evangelists		(1918), (1932) (1934)	California, New Jersey, (1928), (1934), (1936) N. B. M. Ex.
Stanford University School of Medicine		(1936)	California
University of California Medical School		(1925)	California
University of Colorado School of Medicine		(1930)	California
Yale University School of Medicine		(1908) (1929), (1932), (1933, 3), (1934, 4), (1935) N.B.M.Ex.	Maryland,
Georgetown University School of Medicine		(1926), (1934, 2)	New Jersey,
Howard Univ. College of Med.		(1929) Dist. Col., (1934), 2), (1935, 2), (1936) Tennessee, (1935, 2)	Maryland, Virginia
Emory University School of Medicine		(1928) (1933) N. B. M. Ex., (1934) New Jersey	Georgia,
Loyola University School of Medicine		(1932) Ohio, (1933) (1936) Maryland, (1936, 2) N. B. M. Ex.	New Jersey,
Northwestern University Medical School		(1902)	Illinois,
Rush Medical College		(1919), (1924) Illinois, (1929) (1932) California, (1934) Maryland, (1923), (1929), (1934), (1935), (1936) N. B. M. Ex.	Minnesota,
School of Medicine of the Division of the Biological Sciences		(1935)	N. B. M. Ex.
University of Illinois College of Medicine		(1910)	Illinois
Indiana University School of Medicine		(1931), (1933, 2), (1934, 2), (1935)	Indiana
State University of Iowa College of Medicine		(1923), (1925), (1930), (1933), (1935)	Iowa
University of Louisville School of Medicine		(1933)	N. B. M. Ex.
Tulane University of Louisiana School of Medicine		(1927)	Puerto Rico,
Medical School of Maine		(1934) N. B. M. Ex., (1935)	Indiana
College of Physicians and Surgeons of Baltimore		(1901) (1911) (1914)	Maine Maryland, Puerto Rico
Johns Hopkins University School of Medicine		(1912), (1930, 2), (1932), (1933, 4), (1934, 2), (1935)	Maryland, (1918), (1930), (1932), (1933, 3) N. B. M. Ex.
University of Maryland School of Medicine and College of Physicians and Surgeons		(1925), (1932), (1935, 2), (1936, 2)	Maryland, (1935) New Jersey
Boston University School of Medicine		(1930) (1934)	Ohio, New Jersey, (1934), (1935) N. B. M. Ex.
Harvard University Medical School		(1928) (1930) (1929), (1930), (1931, 2), (1932, 3), (1933, 3), N. B. M. Ex.	Minnesota, Massachusetts, (1933) New Jersey, (1927),
Tufts College Medical School		(1930), (1931), (1932), (1934)	N. B. M. Ex.
University of Michigan Medical School		(1929) (1933) N. B. M. Ex.	Michigan,
University of Minnesota Medical School		(1930) (1935), (1936)	N. B. M. Ex., Missouri
St. Louis University School of Medicine		(1916) (1935) N. B. M. Ex.	Missouri,
Washington University School of Medicine		(1914) (1930)	Missouri, Illinois
Creighton University School of Medicine		(1934)	Iowa
University of Nebraska College of Medicine		(1925)	Nebraska
Albany Medical College		(1933), (1935, 3)	N. B. M. Ex.
Columbia University College of Physicians and Surgeons (1927), (1932, 3), (1933, 3), (1934, 4) N. B. M. Ex., (1933), (1934), (1935)			New Jersey, (1933) Maryland
Cornell University Medical College		(1930) (1931), (1932, 4), (1933, 6), (1934, 3)	Ohio, (1930), N. B. M. Ex.
Long Island College of Med.		(1932)	New Jersey, (1935, 2) N. B. M. Ex.
New York Homeopathic Medical College and Flower Hospital		(1934, 2)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College		(1933), (1934, 2), (1935)	N. B. M. Ex.
Syracuse University College of Medicine		(1934)	N. B. M. Ex.
University of Buffalo School of Medicine		(1932), (1935)	N. B. M. Ex.
University of Rochester School of Medicine		(1931) (1932), (1933, 3), (1934, 4) N. B. M. Ex., (1934) Iowa, (1934, 2) New Jersey	Ohio,
Duke University School of Medicine		(1933), (1934, 4)	N. B. M. Ex.
Eclectic Medical College, Cincinnati		(1935) (1926), (1935, 4), (1936, 7)	New Jersey, Ohio
Ohio State University College of Medicine		(1926), (1930), (1931), (1933)	Ohio
University of Cincinnati College of Medicine		(1935) (1933), (1934), (1936)	N. B. M. Ex., Ohio
Western Reserve Univ. School of Medicine		(1921), (1931), (1933), (1934, 2), (1935)	Ohio
University of Oregon Medical School		(1931)	Ohio
Hahnemann Med. College and Hospital of Philadelphia		(1923) (1924) Penna., (1929) Ohio, (1935, 2), (1936, 3) Maryland	California,
Jefferson Medical College of Philadelphia		(1935) (1933) New Jersey, (1934) N. B. M. Ex.	Penna.,
Medico-Chirurgical College of Philadelphia		(1909), (1911) (1916) New Jersey	Penna.,
Temple University School of Medicine		(1934) (1934), (1935)	New Jersey, No B. M. Ex.

University of Pennsylvania School of Medicine.....(1901) Penna., (1923) Puerto Rico, (1927), (1930), (1931) N. B. M. Ex., (1935) New Jersey
University of Pittsburgh School of Medicine..(1927), (1929) Penna.
Woman's Medical College of Pennsylvania.....(1935) New Jersey
Meharry Medical College.....(1935, 6) Tennessee
University of Tennessee College of Medicine.....(1934, 2) Tennessee
Vanderbilt University School of Medicine.....(1932) Tennessee
Baylor Univ. College of Medicine (1934), (1935), (1936, 2) Texas
Univ. of Texas School of Med. (1906), (1932), (1934), (1935) Texas
University of Vermont College of Medicine.....(1909) Vermont, (1930), (1931), (1932), (1933) N. B. M. Ex.
Medical College of Virginia.....(1930), (1935) N. B. M. Ex., (1933), (1936, 2) Virginia
Univ. of Virginia Department of Medicine (1923), (1930), (1931), (1933, 2) (1934) Virginia
Marquette University School of Medicine....(1933), (1936) N. B. M. Ex., (1936) Wisconsin
University of Wisconsin Medical School.....(1933) New Jersey
Queen's University Faculty of Medicine.....(1926) Ontario, (1928) Massachusetts, (1932) Maryland
University of Toronto Faculty of Medicine (1920), (1925), (1928), (1929) Ontario, (1929) Great Britain, (1931) New Jersey
University of Western Ontario Medical School.....(1905) New Jersey
McGill University Faculty of Medicine.....(1915) Nova Scotia, (1928) Alberta, (1932) New Jersey, (1935) N. B. M. Ex.
University of Melbourne Faculty of Medicine.....(1927) Australia
Medizinische Fakultät der Universität Wien.....(1914)* Germany, (1926) California, (1915),* (1919),* (1921),* (1923),* (1924, 3),* (1928),* (1930),* (1931)* Austria
Universidad de Santo Domingo Facultad de Medicina (1910)* Dom. Rep.
University of London Faculty of Medicine.....(1920) England
Université de Paris Faculté de Médecine.....(1921)* France
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg (1900),* (1912, 2),* (1923),* (1923), (1926, 2),* (1928)* Germany
Albertus-Universität Medizinische Fakultät, Königsberg.....(1920),* (1921)* Germany
Christian-Albrechts-Universität Medizinische Fakultät, Kiel.....(1912),* (1913),* (1926)* Germany
Ernst-Moritz-Arndt Universität Griefswald Medizinische Fakultät.....(1921)* Germany
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....(1890),* (1914),* (1919),* (1920)* Germany
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin (1919) Wyoming, (1923)* Austria, (1897),* (1898),* (1902),* (1903, 2),* (1910),* (1910), (1912),* (1913),* (1914, 2),* (1916),* (1917), (1918),* (1919, 2),* (1920, 2),* (1921),* (1922, 5),* (1923, 6),* (1924, 2),* (1924), (1925, 5),* (1926, 4),* (1926), (1927, 5),* (1928, 3),* (1929),* (1930)* Germany
Georg August-Universität Medizinische Fakultät, Göttingen.....(1918),* (1920)* Germany
Hessische Ludwigs-Universität Medizinische Fakultät, Giessen.....(1907),* (1923)* Germany
Johann Wolfgang Goethe-Universität Medizinische Fakultät Frankfurt-am-Main (1917),* (1918, 2),* (1920), (1924, 2),* (1926)* Germany
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg (1905),* (1906), (1912),* (1920),* (1921),* (1922, 3),* (1923, 2),* (1925),* (1935, 2)* Germany
Kaiser-Wilhelms-Universität Medizinische Fakultät, Strasbourg.....(1912, 2)* Germany
Ludwig-Maximilians-Universität Medizinische Fakultät, München (1918)* Illinois, (1902),* (1910),* (1914),* (1919),* (1920),* (1921),* (1922), (1923),* (1926),* (1927),* (1930)* Germany
Philipps-Universität Medizinische Fakultät, Marburg..(1920) Germany
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn.....(1903)* Germany
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau (1904), (1912),* (1919, 2), (1922, 2),* (1923, 3),* (1925),* (1927),* (1928)* Germany
Universität Heidelberg Medizinische Fakultät (1910),* (1915),* (1916),* (1917),* (1918), (1920, 2),* (1921, 2),* (1923),* (1925)* Germany
Universität Köln Medizinische Fakultät (1920),* (1921),* (1922, 2),* (1923),* (1925)* Germany
Universität Leipzig Medizinische Fakultät (1908),* (1921, 2),* (1926, 2),* (1928)* Germany
Universität Rostock Medizinische Fakultät (1906),* (1920),* (1924)* Germany
Vereinigten Friedrichs-Universität Medizinische Fakultät, Halle-Wittenberg.....(1920),* (1926),* (1927* Germany
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs.....(1926)* Hungary
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest....(1891)* Michigan, (1924)* Hungary
Queen's Univ. Faculty of Medicine, Belfast, Ireland..(1923) Maryland
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....(1931),* (1934, 3),* (1935, 2)* Maryland
Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia.....(1923) Italy
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia (1933)* New Jersey, (1932), (1933, 2), (1934), (1935, 4)* Maryland
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1923)* Italy, (1924) New Jersey, (1933),* (1934)* Maryland
Rijks-Universiteit te Leiden Faculteit der Geneeskunde (1909)* Holland
Kharkov Women's Medical Institute.....(1916)* Russia
University of Kharkow Faculty of Medicine.....(1913)* Russia
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh.....(1934) New Jersey
University of St. Andrews Conjoint Medical School, Scotland.....(1933) New Jersey
Universität Bern Medizinische Fakultät.....(1934)* Maryland
Université de Genève Faculté de Médecine.....(1909)* Switzerland
American University of Beirut School of Medicine (1934), (1935), (1936) N. B. M. Ex.

* Verification of graduation in process.

Book Notices

Psychiatry for Practitioners. By Various Authors. Edited by Henry A. Christian, A.M., M.D., LL.D., Hersey Professor of the Theory and Practice of Physic, Harvard University. [Reprinted from Oxford Loose-Leaf Medicine.] Cloth. Price, $6.50. Pp. 646. New York: Oxford University Press, 1936.

The list of contributors to this collection of essays on psychiatry, reprinted from the Oxford Loose-Leaf Medicine, should bespeak for it wide and serious attention. The contributors, the nine American ones at any rate, occupy important teaching positions in this country and are naturally expected to keep fully abreast of their subject. The chapters which challenge particular attention are Pearson's on childhood psychiatry and Cheney's on schizophrenia. The former is a clear, comprehensive statement of a branch of psychiatry that has been cultivated only in fairly recent years. Pearson has succeeded in organizing his material in an excellent manner and gives a thoroughly dependable statement of the subject. Psychoanalysts will probably object to the lack of a clear-cut indication in the title that Pearson deals with a psychoanalytic approach to psychiatry. Cheney's chapter on schizophrenia is an excellent summary of the background of this most important problem in psychiatry, whether one views it from its clinical-theoretical aspects or from the extent and gravity of the social-economic implications of this widespread mental disorder. His strict adherence, however, to Adolf Meyer's conception of the nature of this disorder, as "against the formulations of those who looked upon dementia praecox as a disease entity with a toxic or metabolic basis," may be open to considerable doubt in view of the recent claims of the therapeutic effects in this disorder of a strictly biochemical approach. Luxenburger's studies of schizophrenia in identical twins demonstrating that, of ten such instances, eight of the pairs of twins became victims of this disorder, constitutes also a significant challenge to the "psychobiologic habit deterioration" view of the disorder. The general high quality of this book is not entirely shared by the chapter on the psychoneuroses. On the whole, the assumption is justified that a greater service would have been rendered here by one who is less ambivalent in his attitude toward the fundamental conceptions on which the modern treatment of the psychoneuroses is based. Strecker's attempt at a kind of unifying introduction to this volume should facilitate a general orientation on the subject, but his ability to cover the entire field of psychiatry, including the psychoneuroses, without a single reference to the contributions of Freud deserves to be distinguished as "unique," to say the least, in modern psychiatry.

Der Operationskurs des Hals-, Nasen- und Ohrenarztes. Von Prof. Dr. H. Beyer und Prof. Dr. A. Seiffert. II. Die Operationen an Nase, Mund und Hals. Von Prof. Dr. A. Seiffert, Direktor der Universitätsklinik und Poliklinik für Ohren-, Nasen- und Halskrankheiten, Kiel. Cloth. Price, 37.50 marks. Pp. 264, with 350 illustrations. Leipzig: Curt Kabitzsch, 1936.

The author in his preface disarms criticism at the outset by stating that the book includes only such operations as he has found most useful in his own experience. It is therefore intended as a practical work for the nose and throat specialist rather than an all embracing reference book. Furthermore, he purposely omits designating the various operative procedures by the names of their respective authors in order to save time and space. As far as most of the operations are concerned this works no hardship on the reader, since the standard procedures are quite well known. However, in connection with some of the unusual operations one might like to know who originated the technic. On the whole the book covers the ground quite thoroughly, considering the wide range that it embraces. For instance, one finds fairly adequate descriptions of the usual plastic operations about the nose, surgery of the palate, operations on the salivary glands, fistulas and cysts of the neck, and treatment of postanginal sepsis. Most of these are accompanied by simple graphic drawings. Some of the author's own specialties are given considerable space, such as the use of his self-retaining laryngeal spatula for operations in the larynx and hypopharynx and his method of draining periesophageal and mediastinal abscess by incision through the esophagoscope. Many of the chapters are amplified by a discussion of the management of complications and special diffi-

culties that may arise during or following certain operations. These are definitely the fruit of long experience and are particularly valuable. In the main, most of the technic described follows the standard procedures practiced in this country. However, here and there one notes a departure with which one may not agree. For instance, the type of laryngectomy he advocates, the external ethmoid operation and the tonsil and adenoid operation in children are technically not quite the same as those we have been doing. The text is brief, yet clear and straightforward, and includes sufficient data on diagnosis and indications to amplify its usefulness. The book may be considered a useful addition to any laryngologist's library.

Pathological Physiology and Clinical Description of the Anemias. By William Bosworth Castle, M.D., S.M., Associate Professor of Medicine, Harvard University, and George Richard Minot, M.D., S.D., F.R.C.P., Professor of Medicine, Harvard University. Edited by Henry A. Christian, A.M., M.D., LL.D., Hersey Professor of the Theory and Practice of Physic, Harvard University. [Reprinted from Oxford Loose-Leaf Medicine.] Cloth. Price, $3. Pp. 205. New York: Oxford University Press, 1936.

Interest in the anemias, greatly stimulated by the discovery of the efficacy of liver in the treatment of pernicious anemia, has led in the past decade to many important investigations, both at the bedside and in the laboratory. Etiologic concepts in many instances have been modified or completely changed. The concept of a "conditioned" deficiency state in pernicious anemia is entirely new. In the field of therapeutics, liver therapy in pernicious anemia has been perfected and there is a better understanding of the use of iron in the treatment of hypochromic anemias. The researches of Drs. Castle and Minot on these and many related problems are universally known and authoritative, and these authors are unusually well qualified to present the material in a book of this kind. The work originally was written for Oxford Loose-Leaf Medicine and subsequently was published separately by the Oxford University Press in order that it might be made generally available.

The authors have drawn freely from their own experimental work, their wide clinical experience and the literature. In so doing they have collected a vast amount of material, much of which is of such recent origin that only workers in the same field or in closely related fields would be thoroughly acquainted with it. In the opening chapter of the book there is a brief review of the normal physiologic processes of formation and destruction of blood and their reflection in the peripheral blood. This is followed by a presentation of important diagnostic methods that should be utilized in studying cases of anemia. The anemias are dealt with in subsequent pages and are taken up in logical sequence. Their classification is based primarily on etiology. As suggested by the title of the book, emphasis is placed on the pathologic physiologic processes that are of fundamental importance in the causation of the various types of anemia, for it is obvious that such knowledge is requisite not only to a complete understanding of disease but to rational therapy. Because the book is written from the physiologic rather than the pathologic point of view, detailed morphologic descriptions of the cells of the blood and hematopoietic organs are not included.

Although it is difficult in a work of such general excellence to select subjects more thoroughly treated than others, attention should be called to the masterly presentation of the macrocytic anemias, a field in which there have been many important contributions in recent years. The authors stress the fact that the physiologic defect in erythropoiesis in the macrocytic types of anemia is concerned chiefly with cell production; in the hypochromic types of anemia, with hemoglobin formation. Of primary interest is the first group, in which insufficient red cell production has been shown to be attributable to nutritional deficiency of the bone marrow, a deficiency of substances essential for regeneration of red cells. This deficiency may be attributable to (1) failure of the gastric mucosa to secrete a substance, the antianemic principle or intrinsic factor of Castle, (2) defective diet (low in the extrinsic factor of Castle) and (3) disturbances in absorption from the intestinal tract or a combination of these factors. Various diseases in which macrocytic anemia may develop include addisonian pernicious anemia, sprue, pellagra, tropical macrocytic anemia of pregnancy, "pernicious (macrocytic) anemia of pregnancy" and certain pathologic conditions of the gastro-intestinal tract (gastric carcinoma, gastric polyps, chronic pyloric stenosis, intestinal stricture, idiopathic steatorrhea, Diphyllobothrium latum anemia and so on). The macrocytic anemia of hepatic disease is discussed in the section dealing with idiopathic disturbances of the blood-forming organs, since its etiology is not as yet clearly understood.

In the concluding chapter there is a splendid presentation of modern knowledge of therapy; the discussion first is taken up from the standpoint of general methods of treatment and ends with a presentation of therapy in specific types of anemia. Appended is an extensive bibliography arranged according to subject.

This work, although not long, contains a wealth of information. It is clear, concise, and written in an easy, readable style. The publishers are to be commended for the type, the paper and the format, which are excellent. The book is to be highly recommended to students and practitioners of medicine.

Aspectos de la sífilis congénita en nuestro medio. Por los Doctors Julio Lorenzo y Deal, director del Hospital Pereyra Rossell, y Rito Etchelar, médico del dispensario No. 11 del servicio protección a la infancia. Publicaciones del Departamento científico de salud pública, Serie 2, núm. 17. Paper. Pp. 91. Montevideo, 1935.

This is an earnest and serious study of one of the most important and often neglected aspects of venereal diseases: congenital syphilis. In their respective capacities as director of a children's hospital and physician in a children's dispensary in one of the largest South American cities, the authors speak authoritatively on their chosen subject. Among 20,000 case reports from Montevideo hospitals, dispensaries and private practice, 200 cases of congenital syphilis were found; i. e., 1 per cent for the group as a whole, and 1.45 per cent for 3,242 infants. Another Uruguayan writer, Burghi, quoted much higher figures: 11.8 per cent among 1,231 infants; but Morquino gave only 0.26 per cent for 3,000 infants, Navarro 3.18 per cent, and Infantozzi's obstetric clinic shows 3 per cent among 7,822 births in the period 1929-1933, García San Martín's 2.44 per cent among 6,949 births in his clinic, Canzani 0.66 per cent among 300 births, and Pacheco 0.26 per cent among 2,650, the two latter being among private patients in the upper classes. During the last decade the symptoms of the disease seem to have decreased both in seriousness and in prevalence in Montevideo. Among serologic methods the Kahn test proved most sensitive, with 77 per cent positive results among clinical cases. Only three cases in twins were found in the series. This is an interesting report, filled with valuable data on an important public health and social problem, which must await solution until all agencies concerned, and especially society as a whole, extend their full cooperation to the medical profession and the health authorities.

Keeping Your Child Normal: Suggestions for Parents, Teachers and Physicians; With a Critical Estimate of the Influence of Psychoanalysis. By Bernard Sachs, M.D. Cloth. Price, $1.50. Pp. 148. New York & London: Paul B. Hoeber, Inc., 1936.

This small book is a slightly expanded form of a similar publication by the same author issued in 1926. One or two new chapters have been added, giving valuable suggestions for parents and teachers with regard to the care of normal children, particularly those of school age. Much of the advice is sound, for the author has a broad insight into nervous and mental problems and also into the common pitfalls for the child with a normal mind. Occasionally Dr. Sachs is too dogmatic in his utterances. On page 28, for instance, he states that "stuttering is definitely curable at all ages and surely in early childhood." Not a few physicians and even some of the author's colleagues wish that this statement were true. The bulk of the book, however, is given over to Dr. Sachs's critical review of psychoanalysis, particularly with relation to the use of the analytic method in patients under 18 years of age. The author feels strongly not only that the method is an unprofitable one to pursue but that it offers definite dangers. Patients have been made worse by prolonged analysis, some of them permanently. Dr. Sachs brings out all the standard arguments against psychoanalysis in a clear-cut and logical manner. Occasionally, however, he oversteps the bounds of scientific discussion when he uses such terms as "satellites" and "disciples" of Freud. There is much sound advice here, but the whole field is still somewhat controversial and one should not consider that the last word on the subject has been said by this author.

Hogle roentgenbiologiske Forsøg, med et transplantabelt Mucosarcinom og et transplantabelt Mucolymfosarkom som biologiske Objector. Af Mogens Thrane. (Mit deutscher Zusammenfassung). Paper. Pp. 118, with 9 illustrations. Copenhagen: NYT Nordisk Forlag: Arnold Busck, 1935.

This monograph represents experimental work done by the author for his doctor's degree. It is of special interest to cancer students and those physicians who use radiation as a method of treatment in cancer. The author uses mice and has confined his work to mouse carcinoma and mouse lymphosarcoma. He first attempted to determine the lethal dose in each tumor in vitro and in doing so established the fact that the lethal dose is the same whether a single massive treatment is given or whether the dosage is divided and protracted as in Coutard's technic. He then gives up to ten times the lethal dose to the tumor and finds that on implantation of the irradiated tumor it still has the power of growth after twenty-four and forty-eight hours. Experiments were then conducted on the possibility of increasing the resistance of the host toward new growths by total irradiation of the animal. The conclusions reached are to the effect that irradiation does not, in itself, lead to increase of resistance on the part of the host. The literature is reviewed and a long bibliography is attached. Interested students should consult the original. Since many are not familiar with Danish, a summary in German is attached.

Health Facts for College Students: A Text-Book of Individual and Community Health. By Maude Lee Etheredge, M.D., Dr.P.H., Professor of Hygiene and Medical Advisor for Women, University of Illinois. With a foreword by Ray Lyman Wilbur, M.D. Second edition. Cloth. Price, $2. Pp. 365, with 61 illustrations. Philadelphia & London: W. B. Saunders Company, 1936.

This contains certain revisions and additions which represent distinctive improvements over the first edition, valuable though that was. The author has had extensive experience in the teaching of hygiene to women students of the University of Illinois and through this book is offering to students and other teachers of hygiene the advantage of her rich and successful experience in this work. She uses a style that makes for relatively easy reading and tends to hold the interest surprisingly well in a book which in general make up conforms to the traditional textbook. The subject of individual and community health is comprehensively — possibly too comprehensively — covered for a small book. The important points are presented without a confusing mass of detail; the hosts of "dos" and "don'ts" of hygiene which college students so strongly resent have been largely omitted. The information presented is scientifically sound. For the purpose for which it is intended, that is, the presentation of health facts to college students, this book can be well recommended.

Otosclerosis: A Résumé of the Literature—1928-1935. Volume III. Edited by Arthur B. Duel, M.D., and Edmund P. Fowler, M.D. Issued by the Central Bureau of Research of the American Otological Society, Inc. Cloth. Price, $3.50. Pp. 180. Saint Louis, Missouri: Annals Publishing Company, 1936.

This volume, which represents the third in a series on otosclerosis, presents a review of the literature from 1928 to 1935 inclusive. The American Otological Society, through its Central Bureau of Research, has done remarkable work on the subject of otosclerosis. The first two volumes were even more extensive than the present one. This volume has the subjects divided into fifteen chapters, including those on heredity, embryology, regression, bone pathology, endocrinology, metabolism, psychology and treatment. In the second section there is an index of the literature according to authors and an annotated bibliography. The subject of otosclerosis is so complicated, the theories regarding its pathogenesis so numerous, and the matter of treatment so nearly nonexistent that any information is highly welcome. This publication represents great labor, is most authoritative, and should prove as important and instructive as the two preceding volumes.

Stralegenetik og klinisk Røntgenvirksomhed. Af L. Østergaard Christensen. Paper. Pp. 177, with 3 illustrations. Aalborg: Knud Engsigs Boghandel, 1935.

Shortly after the introduction of x-rays into clinical practice, it was observed that the cells of reproduction were especially sensitive to irradiation. This has led some observers to feel that children born from cells damaged by irradiation would show various developmental defects. This is the problem that the author has been working on experimentally. His work was done on white mice. They were subjected to small doses of x-rays up to doses of 800 roentgens, after it had been determined that the sterilization dose was 1,000 roentgens. Some of the animals were subjected to direct irradiation, while some had only scattered irradiation, such as obtains when the animal is in the treatment cubicle but is not in the radiation beam. The author was unable to demonstrate any gene or chromatin effects in his material, but he did find profound effects on growth and longevity of the offspring. As a result of his work he concludes by saying that certain rules and regulations are in order in clinical radiology: 1. Therapeutic doses should not be applied to the organs of reproduction unless one is sure that a permanent sterilization is produced. 2. Radiation associated with diagnostic processes in the neighborhood of the reproductive organs should be reduced to a minimum. 3. X-ray technicians should avoid direct and secondary irradiation as much as possible. This piece of work should be of special interest to radiologists and students of morphology.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Prescribing Over the Radio; Prejudice of Members of Board in Revocation Proceedings.—A complaint was filed with the Kansas state medical board April 28, 1930, seeking the revocation of Dr. John R. Brinkley's license to practice medicine in that state. The complaint contained eleven specific charges of fraud, immorality and unprofessional conduct. One charge was that Brinkley performed a "compound operation" on patients for the purpose of curing impotence, high blood pressure, epilepsy, dementia praecox, and diseases of the prostate gland and kidneys, and that the operation was of no value to patients. Another charge was that Brinkley gave talks over the radio—

> for the purpose of enticing patients to his hospital and to induce persons to purchase medicines; that he diagnoses and prescribes for patients over the radio; that he gives prescriptions by numbers which have to be filled by and purchased at certain drug stores, from which he obtains a commission; . . . that such diagnosing and prescribing by radio are necessarily inaccurate and dangerous, carrying too great a hazard of error in misinterpretation of symptoms, inaccuracy or patients' statements of the location and character of complaints, the risk of misunderstanding the respondent's directions and confusion of numbers given of prescriptions, and lacking entirely in the information to be gained by the usual ordinary routine physical and laboratory examination of the patients, without doing which respondent is grossly negligent.

Brinkley was given notice of the charges and a hearing was held July 15, 1930. The hearing, with some adjournments, lasted until September 16 and included a session at which Brinkley performed the "compound operation" in the presence of the board. On Sept. 17, 1930, the board revoked Brinkley's license and on Dec. 30, 1931, he instituted proceedings in the United States district court, district of Kansas, to set aside the revocation order on the ground that it invaded rights guaranteed to him by the federal constitution. The district court, after a long trial, dismissed the action, July 15, 1935, and Brinkley appealed to the United States circuit court of appeals, tenth circuit.

Does this record disclose, asked the court, no more than a conflict of opinion among reputable surgeons as to the technic of operative procedure or as to when it is indicated? Or does it disclose that Brinkley was using his license to perpetrate a cruel hoax on the public by exacting extravagant fees for a trivial and worthless operation? Did Brinkley endanger the health of his patients by seducing them into the belief that serious diseases could be cured by a surgical hocus-pocus? Whether it is the one or the other, the court said, is a question peculiarly for the decision of men skilled in anatomy. There is, observed the court, a great volume of evidence in the record to support the latter conclusion; and if such is the fact, the board would have been derelict if Brinkley's license

had not been revoked. It is true that the great advances in medical science have come about by the courage of pioneers, whose efforts often met with ridicule from their professional brethren. It is true that physicians even yet disagree. It is also true that charlatans masquerading as physicians defraud the public to their own enrichment by promising to cure cancer with innocuous ointments and thus endanger the lives of their patients by depriving them of sound medical advice. Between these two extremes there is a twilight zone where doubts might perplex. But unless it can be said, from the record, that there is no doubt that this is a mere disagreement among physicians, the finding of the board is not open to review. The legislature had properly committed the vital question of the fitness of those who administer to the sick to a skilled board of medical men and not to courts unlearned in the art. The proof here, the court said, amply supports the conclusion that the "compound operation" was not an honest effort to relieve suffering, but a scheme for Brinkley's unjust enrichment.

Through regular broadcasts, continued the court, Brinkley diagnosed almost every ailment to which the human flesh is heir. Sometimes he told his patients to consult a physician; much more often he prescribed remedies, by numbers, which could be obtained from drug stores throughout the Middle West, to whom he had furnished the prescriptions and from whom he received a part of the price of some of the prescriptions. These diagnoses were made without an examination of the patient, and on only such symptoms as the patient would give in a letter or telegram. One need not be skilled in medicine, the court said, to understand the grave dangers to human life involved in diagnosis and prescription on such sketchy facts as are obtainable from a letter or a telegram; nor of the danger to thousands of others listening in who apply such advice to their own self-diagnosed diseases. It is no answer to suggest that the prescriptions were harmless in themselves; to prescribe bread pills to a diabetic patient whom insulin might save is to trifle with human life. The trial court aptly said:

> Those methods are not only in conflict with the ethics of the profession but are in my opinion in conflict with the best interests of the public, and that irrespective of the value of the operations performed by him at the hospital for the amelioration of the prostate gland or of the benefits to individuals urging prescriptions given through radio broadcasting, the possibilities of injury to the general public resulting from such methods are so apparent if such practice became general and usual that its mere statement is, I think, sufficient.

It was for men trained in medicine instead of the law to determine whether Brinkley's conduct constituted unprofessional conduct. The board of medical examiners determined that it did so constitute and there was, the court said, substantial evidence to support its finding.

The members of the board, Brinkley contended, were prejudiced against him before the hearing started, and some of them were active in instigating the complaint. Without detailing the evidence, the court said, it does appear that some of the members of the board had expressed such prejudice, and doubtless all were in fact prejudiced. The publicity used by Brinkley, in the opinion of the court, made public prejudice well-nigh inevitable. At any moment the program on the radio might change from cowboy songs to the diagnosis of disease and the extolling of the "compound operation." That the members of the board had radios in their homes constituted no constitutional disqualification. One of the issues of the case was whether the radio talks were in fact given and whether they violated professional standards of conduct. The members of the board having radios thus had personal knowledge of the facts alleged, and necessarily formed some opinion as to whether they were in conflict with professional standards. The medical practice act provided only one tribunal with power to revoke a physician's license. If such powers may not be exercised if the members of the board are prejudiced, then any physician who commits an offense, so grave that it shocks every right thinking person, has an irrevocable license to practice his profession if he can get the news of his offense to the board before the hearing begins. This will not do, the court said. The commendable efforts of the medical profession to raise its standards by cleaning its own house cannot be set at naught by any such rule of law. The trial court, after patiently hearing the evidence as to the attitude of mind of the individual members of the board, disposed of the contention in this language:

> Under the general terms of the statute, the Medical Board is empowered to protect the public against conduct which is clearly against public interests and therefore necessarily unprofessional, the same as if the legislature had specifically denounced and prohibits such practice. The members of the board were not disqualified because they knew of his methods prior to the hearing and condemned them. John R. Brinkley's methods were so notorious that ignorance of them by members of the board was an impossibility and such knowledge compelled condemnation.

With this holding, the circuit court of appeals expressed itself as in entire accord.

After reviewing the entire record, at length, the circuit court of appeals concluded that Brinkley's constitutional rights were not infringed. The judgment of the district court against Brinkley was therefore affirmed.—*Brinkley v. Hassig, 83 F. (2d) 351.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Philadelphia, April 9-10. Dr. E. R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Association of Anatomists, Toronto, Ont., March 25-27. Dr. George W. Corner, 260 Crittenden Blvd., Rochester, N. Y., Secretary.

American Association of Pathologists and Bacteriologists, Chicago, March 25-26. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

Arizona State Medical Association, Yuma, April 1-3. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Little Rock, April 12-14. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Florida Medical Association, St. Petersburg, April 5-7. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.

Pacific Coast Surgical Association, Seattle, Wash., and Victoria, B. C., Feb. 24-27. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.

South Carolina Medical Association, Columbia, April 13-15. Dr. E. A. Hines, Seneca, Secretary.

Southeastern Surgical Congress, Louisville, Ky., March 8-10. Dr. Benjamin T. Beasley, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Ninth Annual Meeting, Held in Chicago, Nov. 6 and 7, 1936

The President, DR. FRED M. SMITH, Iowa City, in the Chair

(Concluded from page 590)

Clinical Study of Serious Complications from Blood Transfusion

DR. ELMER L. DEGOWIN, Iowa City: Ten serious complications occurred in 2,500 blood transfusions. There were six cases of transfusion anuria, two cases of hemoglobinuria without anuria, one with symptomless jaundice, one with amaurosis from retinal hemorrhages. The six cases of transfusion anuria merit special attention. Five patients died of uremia and one recovered. No incompatibility between donors' and recipients' bloods could be proved in four of the six cases. Recognized therapy such as intravenous saline solution, dextrose and alkalis, phlebotomy, irrigation of the renal pelves, x-rays and diathermy over the kidney regions, and spinal anesthesia was ineffective. Decapsulation of the kidneys or transfusion of compatible blood was not attempted. The exact etiology and treatment of this condition are not yet well understood.

DISCUSSION

DR. J. M. HAYMAN JR., Cleveland: I should like to ask what the specific gravity of the urine was in these patients.

DR. MOSES BARRON, Minneapolis: Was all the blood cross agglutinated?

DR. ELMER L. DEGOWIN, Iowa City: As to the specific gravity of the urine passed, after renal insufficiency has developed it is generally low and there is either oliguria or complete anuria. The question was asked about the incidence of cross agglutination. After these transfusion reactions occurred these cases were all checked by two or three methods. The donors were available. These patients all lived ten days

after transfusion. My associates and I had all the time we needed in which to search for agglutination and hemolysis, and to perform all the tests we knew about. We were not able to demonstrate any cross agglutination or hemolysis in some of these cases.

The Treatment of Undescended Testes

Drs. W. O. Thompson, A. D. Bevan, N. J. Heckel, E. R. McCarthy and Phebe K. Thompson, Chicago: In contrast to the large proportion of successful results (70 per cent on the average) reported by various observers in the treatment of undescended testes with an anterior pituitary-like substance, we were able to produce descent in only about 20 per cent of the cases. In four of five cases showing descent, the testis could be pulled to the upper end of the scrotum or nearly to this level before treatment was started. In all successful cases descent occurred within one month, but stimulation of genital growth persisted much longer. In all patients treated surgically after prolonged administration of anterior pituitary-like substance, anatomic factors making descent difficult or impossible were present. However, the stimulation of genital growth produced by preoperative treatment with this material seemed to make surgical procedures less difficult. It would thus appear that, in the present state of our knowledge, operative procedures are necessary in most cases of undescended testes but should be preceded by from four to six months of treatment with anterior pituitary-like substance.

The Four-Lead Electrocardiogram in Coronary Occlusion

Dr. Anne S. Bohning, Chicago: Two hundred consecutive cases with four lead electrocardiograms diagnostic of coronary occlusion were followed over a period of three years. Six hundred and fifty curves were analyzed in detail. The complete evolution of the four lead electrocardiogram in anterior and posterior infarction was demonstrated. Four lead electrocardiograms in thirty-five autopsies following coronary insufficiency, including twenty-five cases of coronary occlusion, were studied. The differences in the form of the electrocardiographic variations in the types of coronary insufficiency and infarction were analyzed. The striking ST variations associated with acute thrombosis are contrasted with the changes seen in the more slowly developing myocardial involvement produced by occluding sclerotic plaques.

DISCUSSION

Dr. Harold Feil, Cleveland: I should like to ask Dr. Bohning whether the electrocardiograms of patients who have been digitalized have not been difficult to differentiate from those of patients with recent infarction, especially when only one record has been taken.

Dr. L. N. Katz, Chicago: Several things should be emphasized about this study. The evidence is clear that one can differentiate between the classic electrocardiogram of thrombotic closure and the less typical electrocardiogram of the arteriosclerotic closure with its associated coronary sclerosis. The use of serial curves gives a fairly complete idea of the time course in coronary occlusion and also the rate of healing. The record before an attack may be normal or abnormal. Full recovery as revealed in the electrocardiogram may take a month or a year or two or may never occur, the patient showing a stabilized abnormal type of electrocardiogram for years. If these facts are borne in mind, some of the confusion in interpreting such electrocardiograms will be avoided and the usefulness of these records will be enhanced. The time has come it seems to me to establish a standard location for the fourth lead. There is too much confusion in this regard in the literature. Perhaps a committee should be appointed to investigate this matter. My associates and I have been placing the chest electrode in the fourth interspace just to the left of the sternum. This is over the area of solid dulness and is more apt than other localities to pick up the electric currents from silent areas of the heart. This site can easily be defined by any technician, intern or doctor, so that variations in serial records have more significance. The practice of placing the chest electrode over the apex of the heart, I believe, should be discarded, as this is a variable point as regards both the chest and the heart itself. If it is deemed essential to use a second spot besides the parasternal one, the fourth interspace in the anterior axillary line may be employed. We have not found that this last site, or any other, is more informative than the one we generally used. The location of the distant electrode is not so important. We have found it most convenient to use the left leg electrode for this purpose.

Dr. A. R. Barnes, Rochester, Minn.: The idea is put forth in the discussion that it is possible to detect by the electrocardiogram myocardial fibrosis produced by gradual coronary narrowing and by sclerotic plaques. I think that yet remains to be proved. In the first place, I see a great many patients who have advanced coronary disease, with partially occluding plaques and with extensive myocardial fibrosis, who do not have diagnostic changes in either the standard or the chest leads. If that case is complicated by hypertension there is very apt to be a negative T wave in lead 1, with a low RST segment and a tendency to elevation of the ST segment in lead 3. To my mind that is the result of chronic left ventricular strain and is not a product of gradual occlusive disease. I know that this is a statement which will be challenged readily. I have had two or three experiences lately which seem to lend a little bit of evidence to support that idea. Certain patients with hypertension have been subjected to splanchnic resection, which resulted in a lowering of the blood pressure. Before operation these patients had a negative T wave in lead 1 and after operation the T waves came back to normal, indicating that the probabilities are that relief of the ventricular strain results in a restoration of the T waves to normal. I would emphasize that in hypertension there exists a variation of the ST segment which must not be confused with or taken to mean evidence of coronary disease. I agree with Dr. Katz that some standard point is needed at which to place the fourth lead. More should be known about it. The fourth lead is distorted by hypertension, acute pulmonary emphysema, congenital heart disease, pericarditis, bundle branch block and digitalis therapy. There are many facts that must be taken into consideration before concluding that the fourth lead is diagnostic of coronary disease.

Dr. Drew Luten, St. Louis: Regarding the location of the chest lead, I agree with Dr. Katz and Dr. Barnes in their insistence on specificity. It would appear, however, that one should take pains to state the location of the lead rather than to insist on its being in a particular place. Dr. Goodman in our laboratory made many records of a single normal individual, placing the exploring electrode on various places on the chest wall. He then made a large drawing of the chest and pasted on it the electrocardiograms led off from the various places, so that at a glance one can compare the records made from different places. This comparison of records shows the importance of stating where one puts the chest electrode.

Dr. Anne S. Bohning, Chicago: In answer to Dr. Feil, I may state that in all the cases it was known how much digitalis had been given before each electrocardiogram. It is not so difficult to differentiate digitalis changes in the T waves from true myocardial injury as is sometimes thought. My associates and I have a large group of serial electrocardiograms, and in most of these we can clearly differentiate digitalis changes. We do not use digitalis a great deal in our cases of coronary occlusion but somewhat more often in arteriosclerotic patients. In none of the cases shown was digitalis given in large amounts. As far as bundle branch block is concerned, it does obscure the electrocardiographic picture in cases of myocardial infarction. In a number of the autopsies there were septal infarctions but these cases did not show characteristic changes in the electrocardiograms. Seemingly, if the septal involvement is near the apex or lower third of the septum, it does not always appear in the electrocardiogram. When the septal infarction is extensive, it does complicate the electrocardiographic picture, but serial curves usually show ST and T changes between records which aid in diagnosis. There were many cases of hypertension, and most of them showed myocardial involvement at autopsy. I do not believe that hypertension itself has an effect on the electrocardiogram. Certainly the position of the heart in the chest will change the form of the electrocardiogram, especially the form of the QRS complex, and hypertensive cases usually show a left ventricular preponderance. We have carried out extensive studies in a large number of

cases, using multiple leads over the chest. Many of these were hypertensive patients as well as others with coronary occlusion and bundle branch block, and I can state with some assurance that these T changes are not found in one location only but more often show variations across the entire chest. It must be something other than the hypertension alone that causes the change in the electrocardiogram. It may be in the variation in the size of the heart and its altered relation to the chest wall, or it may be in a definite myocardial involvement, but certainly the cause of the electrocardiographic abnormalities must be associated with changed conditions in the heart itself. I do not believe that I stated that we differentiated sudden thrombosis from slowly occluding sclerotic plaques in interpreting our electrocardiograms. I have merely described and shown the differences observed in the types of electrocardiograms found in these autopsies grouped according to the observations made. I think it is worth while pointing out that these differences commonly occur. As far as T_4 is concerned, we have seen a positive T_4 in normal children up to 12 years of age and sometimes older and also in cases of bacterial endocarditis and rheumatic fever in children. We have also observed a number of other cases in which we could not explain the positive T_4. These T_4 waves are, however, not of the type which suggests coronary occlusion. In most cases the ST_4 is elevated rather than depressed. I think these changes are possibly associated with enlargement of the right side of the heart or rotation of the heart. I cannot say that it is due to these causes entirely, but T_4 positive in such cases seems to be associated with a different placement of the heart in the chest. A positive T_4 which is normal on the right side of the chest is probably carried over to the left in many of these patients, since in young children the right side of the heart lies more anteriorly than in adults. Most of these QRS_4 complexes associated with T_4 positive are diphasic in children, while in coronary occlusion with anterior infarction the QRS_4 associated with T_4 positive is mainly or entirely up.

Quinidine Therapy and the Method Used

DR. S. A. WEISMAN, Minneapolis: This is a six year clinical study of a method of giving quinidine to ambulatory patients with auricular fibrillation. The method is based on a laboratory animal experiment which shows that practically all the quinidine is eliminated from the blood stream one hour after the drug has been given intravenously. The patient is first digitalized. Quinidine is then given in very small doses one hour apart, and gradually each dose is increased. It is found that this method has two distinct advantages: 1. The patients establish a tolerance for the drug. 2. Rarely do the patients complain of the toxic symptoms so often attributed to quinidine. The results with this method show that in a series of cases of auricular fibrillation over 70 per cent were restored to normal rhythm.

DISCUSSION

DR. L. N. KATZ, Chicago: No one denies that slowing the heart relieves palpitation and other cardiac sensations, but it is extremely doubtful that the filling of the heart is improved at slow ventricular rates by eliminating auricular fibrillation. At rapid ventricular rates the absence of auricular filling is missed, but at slow rates the ventricles can make up this deficit. There is no need, therefore, to restore sinus rhythm on this account. Is it not much better to give quinidine in divided doses over twenty-four hours instead of concentrating the doses in one period of the day? After all, quinidine is excreted rapidly, most of it within four hours. Is it not the aim to maintain the maximum dose over a long period rather than to produce peak concentrations for short periods? Does Dr. Weisman advocate the use of quinidine indiscriminately in all cases of auricular fibrillation or does he follow the standard contraindications; namely, to avoid quinidine when the heart is enlarged, when the fibrillation is long standing and when heart failure is present? While no one denies that quinidine could be more widely used than at present, the majority of authorities still believe that there is some hazard connected with the use.

DR. C. C. MAHER, Chicago: I have been interested in the use of quinidine for some years, employing a somewhat different method but along the same line of thought. My early studies were concerned with the duration of the effect of quinidine as measured by electrocardiographic changes. Most of these studies were made with chest leads directly over the base of the heart, showing the effect on the auricular rate. It appeared that, although the quinidine was rapidly excreted, the effect on the auricular rate remained for a period of twenty-four hours when the drug was given orally. If it is given intravenously the effect is apparent almost immediately and may last from four to six hours. The method of oral administration has been 3 grains (0.2 Gm.) six hours apart, continued throughout the night, such as Dr. Katz mentioned. That method of night dosage may seem somewhat unpractical, but most cardiac patients are prone to wake up at least once during the night. I found early in my experience that the time element was an important factor. On that basis I keep the patients on quinidine over a long period. Some patients have not converted until they were on the drug for from six to eight weeks and some have taken from six to nine months or even a year before they converted. I have been most interested in studying patients who do not convert. Those in the rheumatic group appear to have some active infection and possibly an active myocarditis. In the arteriosclerotic group very often infections in the urinary or biliary tracts played a rôle. Occasionally mild thyrotoxicosis was discovered as a factor. I would be interested in asking Dr. Weisman what he does in patients on quinidine who develop chronic auricular flutter, a problem which is sometimes a baffling situation.

DR. ROY W. SCOTT, Cleveland: Dr. Weisman stated that the vast majority of his patients were in the hypertensive or coronary group, with a minimum number in the rheumatic group. I wonder whether the type of case treated was not the most important factor in his results, namely, the effect of quinidine in restoring a sinus rhythm in a high percentage of auricular fibrillation, and the absence of embolic accidents in the series of patients treated. I still believe that quinidine is a two edged sword and therefore I wonder whether such favorable results as here reported by Dr. Weisman would occur in a series of rheumatic heart cases with mitral stenosis and auricular fibrillation.

DR. CHESTER M. KURTZ, Madison, Wis.: I question the rationale of the routine use of digitalis preparatory to giving quinidine. The value of quinidine depends on its action as a myocardial depressant. Digitalis is a myocardial irritant. I wonder whether the administration of digitalis would not tend to counteract the desired effect of the quinidine.

DR. NORBERT ENZER, Milwaukee: The paper seemed to indicate that considerable emphasis should be placed on the relative occurrence of emboli in these fibrillating hearts. The statement was made that fibrillation was a common source of emboli. A recent review of my own not yet completed satisfies me that auricular fibrillation is in itself a less common cause of arterial occlusion. In my series I found mural thrombi from coronary lesions the most common cause and vegetations on the endocardium and valves next. The presence or absence of arterial emboli as an index of the value of a therapeutic procedure should be taken with caution. Further, arterial emboli do not necessarily take origin from the heart. In that respect, lesions in the brain should be interpreted with great caution. Vagaries of the cerebral circulation are too commonly causes of arterial occlusion.

DR. EDWARD W. HOLLINGSWORTH, Chicago: For a number of years I have been using quinidine, up to two or three years ago chiefly in cases of rheumatic heart disease. I have never seen an accident happen to any of these patients in whom sinus rhythm was restored. The last speaker mentioned the fact that hemiplegia occurred. I have seen two patients in whom I had reason to think that the hemiplegia was due to emboli, and postmortem examination showed a hemorrhage in one. I do not think it can always be said that embolism was the cause. One point which I noticed was that some patients seem to feel better when continued on small doses of quinidine even when sinus rhythm is not restored. I do not see any reason for this.

DR. HAROLD FEIL, Cleveland: I would emphasize the efficacy of treating hyperthyroid patients after operation. The quinidine should be used as a routine when normal rhythm is not restored by operation, because the cause of the fibrillation has been

removed. I think, as Dr. Scott does, that it does not make much difference to which group these cases belong. Dr. Edwards' patient, reported in 1906, lived eighteen years with the auricular fibrillation. One of the points mentioned was the effect of digitalis preparatory to quinidine therapy. In some of these cases it takes prolonged use of quinidine to restore the normal mechanism. Quinidine tends to produce ventricular extrasystoles and to accelerate the heart rate. I am a warm advocate of the use of quinidine with digitalis.

DR. MOSES BARRON, Minneapolis: The use of quinidine in auricular fibrillation has interested me for many years. From my experience at the General Hospital in Minneapolis and from private practice I feel that the danger of producing emboli is exceedingly slight; indeed, in my opinion the proper use of quinidine tends to prevent the production of emboli. If it is remembered that the causes of thrombosis are (1) auricular fibrillation and (2) congestive heart failure, it will be realized that the continuation of fibrillation will predispose to thrombosis within the auricles which may later result in emboli. The reason digitalis is first given is to strengthen the heart's action and reduce the congestive heart failure. Quinidine is then administered to try to establish the normal rhythm and prevent the formation of thrombi if they are not already present. If a patient is watched for congestive heart failure for a long time and if the heart's action is not improved, quinidine should not be given. Dr. Katz is right in emphasizing that quinidine is not to be given in hopeless cases of congestive heart disease.

DR. S. A. WEISMAN, Minneapolis: In regard to Dr. Katz's question, Is there any difference between a slow fibrillating heart and one restored to normal rhythm? Recently Dr. Kerkhof of the University of Minnesota investigated this point in a series of twelve cases of mitral stenosis. The patients were first digitalized until the pulse rate was down to between 60 and 70. The minute volume was determined. Quinidine was then given and after the heart was restored to normal rhythm the cardiac output was again determined. In this group he found that the cardiac output increased about 30 per cent after the heart was restored to normal rhythm. Is quinidine dangerous in auricular fibrillation? I believe that it is more dangerous not to give quinidine in auricular fibrillation. As I said before, fibrillation slows the circulation. This is a predisposing factor to thrombus formation. In my experience I have not had any serious toxic effects or emboli that I could definitely attribute to the use of quinidine. Hochrein has used quinidine in very small doses in all cases of cardiac failure coming to his hospital since 1926. He believes that quinidine helps to prevent ventricular fibrillation, which is probably the cause of sudden cardiac deaths. He and his associates have found that since they have used 0.1 Gm. of quinidine as a routine in all cases of cardiac decompensation they have had fewer deaths from cardiac failure. I have not had much experience with flutter. As far as the effect of quinidine and digitalis is concerned there is no question that the two drugs work much better together. That was shown by the work of Weiss and Hatcher. They determined the amount of quinidine that was lethal for a cat and also the amount of digitalis that was lethal for a cat. They found that when they gave a combined lethal dose of digitalis and quinidine this combination did not kill the cat, showing that these drugs do not have a synergistic action on the heart. On the contrary, they have a favorable action. In regard to giving large doses of quinidine, I do not think that the concentration of the blood should be rapidly increased with the drug. So far as I am concerned, the small dose method is the one that is the least dangerous. By giving quinidine in large doses there is more danger of producing toxic symptoms.

Syncope of Patients with Hypersensitive Carotid Sinus Reflexes

DR. H. L. SMITH, Rochester, Minn.: I have studied fifty patients who came to the clinic complaining of dizziness and syncopal attacks, and in each instance I was able to reproduce these attacks of dizziness and fainting, and in some instances generalized convulsions, by making graded pressure on one or both of the carotid sinuses. Forty-eight of these patients were males and two were females. Stimulation of the carotid sinus, produced by making pressure over the carotid sinus, induced rather striking cardiovascular reactions, such as slowing of the heart rate, varying periods of cardiac standstill (usually associated with marked fall in blood pressure but not always), and paling of the face followed by flushing. These reactions occurred in varying combinations. The most striking reaction was the long periods of cardiac standstill. It is believed that the cardiac arrest is probably attributable to a temporary suppression of the sinus, thus depriving the heart of its normal pacemaker. The major cerebral symptoms are apparently attributable to cerebral ischemia brought on by slowing and stopping of the heart. I do not believe that cardiac slowing and cardiac standstill explain the entire picture. I feel certain that there are other factors also present. In a few instances I was able to induce rather severe attacks and the cardiac rate slowed only a few beats per second, and in other cases rather long periods of cardiac standstill were produced which were not accompanied by unconscious attacks. In other words, in most instances there was a definite correlation between the cardiac standstill and the syncopal attack, but not in all instances.

DISCUSSION

DR. JUSTIN C. WILLIAMS, Chicago: I should like to ask Dr. Smith whether he has had any experience with a younger group of persons. I notice that most of his patients, as mine were, were in the older group. The significance of that has something to do with what I am going to say. Dr. Weiss of Boston has reported that these carotid sinuses are more hypersensitive in the arteriosclerotic group, in the hypertensive group and in those having coronary disease. I have just completed a series of 106 cases. I selected the patients because they were ambulatory and because they were suffering from convulsions. The idea was to find out how many in that group would respond to pressure on the carotid sinus. I found about ninety-six who did respond in various degrees with slight slowing of the heart, and yet some of them would go into convulsions. I started this series with the warning in mind which Dr. Herrick gave me some time ago, that pressure should not be prolonged too long on these carotid sinuses. As I went along I got a little bolder about it and discovered that the heart, although it does go into systole for a time, allows ventricular escapes even during pressure on the carotid sinus. Contrary to that is one individual, aged 63 years, who was examined several times, and each time the time of pressure was increased. There were no ventricular escapes during the time of pressure, which has been kept on for nine seconds, with systole for nine seconds. The pressure has been released and then the heart starts up again. I think this justifies the warning Dr. Herrick gave that if one is going to test these people one must be careful in not prolonging the pressure. Often a supposedly coronary death comes to the postmortem table and no evidence of pathologic change as far as the coronary arteries are concerned is found. These people supposedly die of angina pectoris. I am wondering whether these carotid sinuses have anything to do with that kind of death. I am starting to investigate a group of coronary cases now and shall have something to report later. It may be pertinent to give another story because it involves a group of young people. A group of high school age occasionally gathered for the evening. Some of them discovered that one, a young girl, could be thrown into a fit by pressing on her neck. Evidently somebody had located her carotid sinus, and she very willingly submitted to the entertainment for the evening. They kept it up so long that the girl finally got sick and was brought to the emergency service of the West Suburban Hospital. By the time I got there she had recovered. The interns who got the case had been working with me on this problem, and they gave the girl a lecture. The mother had been sent for and her reaction was also interesting; she thought probably it was a better form of amusement than going to taverns.

DR. S. A. WEISMAN, Minneapolis: I did some experiments on dogs to determine the effect on the reflexes of the carotid sinus by increasing the intracranial pressure. The results were published. During this work another experiment, which was not reported, was done to determine the fatigability of the carotid sinus reflex. The carotid sinus was pressed between the fingers every thirty seconds for several minutes. After five to six minutes the reflex action diminished, and after about fifteen minutes mechanical stimulation had no effect on the

blood pressure or the pulse rate. I should like to ask Dr. Smith whether he observed this phenomenon clinically.

DR. H. M. KEITH, Montreal: I was interested to hear Dr. Smith say that one cannot get convulsions by stimulating the sinus. I can confirm that from my own experience. I have been able to produce some slowing of the pulse, some drop in blood pressure, but no convulsive attacks.

DR. G. E. WAKERLIN, Louisville, Ky.: The carotid sinus and cardio-aortic areas contain chemical, as well as pressure, receptors. Have the authors studied the effect of reduction in the carbon dioxide and hydrogen ion concentrations of the blood, produced by overventilation for example, on the blood pressures of their patients to see whether a corresponding decrease can be brought about by such chemical changes?

DR. GÉZA DE TAKÁTS, Chicago: I have had experience with three patients in whom denervation of the carotid sinus has been done. One was operated on over two years ago, first on one side and then on the other six weeks later. There is no residual hypertension in these patients. The patient operated on two years ago is getting a recurrence of his symptoms. He is a man, aged 32, with no evidence of arteriosclerosis. It is possible that since it was my first denervation it was not as complete as it should have been. It is not enough to denervate the sinus but it is necessary to strip the carotids for 1 inch both above and below the bifurcation. It is possible that this failure is due to faulty technic.

DR. RICHARD CAPPS, Chicago: I should first like to confirm the remarks of Dr. Williams. I have seen complete asystole for as long as thirty seconds due to carotid sinus pressure. I believe that in some cases in which the reflex is unusually active the heart could be stopped for a long enough time to cause death, especially if a peripheral vasodilatation is also present. In the second place, I think that patients who have had coronary thromboses have particularly sensitive reflexes of this type. It is not unlikely that the increased sensitivity of the vagal reflex in the older group, discussed by Dr. Smith, is due to the heart's being more sensitive to vagal impulses than normally and not due to any change in the carotid sinus itself. As to the reason why the symptoms cannot always be correlated with the degree of slowing, I think the answer lies in the fact that there are three separate mechanisms which independently may cause identical attacks. First of all, slowing of the heart, in the second place reflex peripheral vasodilatation producing a fall in blood pressure, and third, the fact that there is a group of patients, particularly younger people (whom Weiss, Ferris and I recently investigated) in whom there is no change in the circulation at all; I mean there is no change in the blood pressure or pulse. We also measured the cerebral blood flow and found no change there. In this group we feel that the symptoms are probably due to direct nerve reflexes to the brain. In many of the older cases, in which bradycardia seems to be the cause of fainting, atropinization fails to alter the attacks produced by carotid sinus pressure, although it abolishes the reflex slowing of the heart. This demonstrates that a cerebral reflex may be present and primary but simply masked by the vagal reflex. I think that such combinations of reflexes account for some of the failures of therapy with belladonna. We found in most cases of the primary vagal type that a small dose of belladonna would diminish the reflex sufficiently so that no spontaneous attacks occurred. This, however, was not true in the group in which the cerebral reflex was the chief cause. One other point is that digitalis seems to increase distinctly the sensitivity of the vagal and cerebral reflex, and the attacks of faintness that many have seen in digitalized patients may be due to this cause.

DR. H. L. SMITH, Rochester, Minn.: It has been my experience that patients who have recently had an acute coronary thrombosis do have carotid sinuses that are hypersensitive, and I have further observed that most adults with congestive heart failure from any cause will have carotid sinuses that are more sensitive than normal individuals. In answer to Dr. Weisman's question as to whether the carotid sinus is fatigable, I have noticed that often rather long and continued pressure or often repeated stimulation causes the carotid sinus to become less sensitive. I suppose this feature could be due to fatigue. I have also noted that the sensitivity of the carotid sinus seems to vary from time to time. Just why this is true, I am not able to explain. Dr. Williams asks the question "Is it dangerous to induce these attacks?" With proper technic I would answer no. I do not feel, however, that long continued pressure on both carotid sinuses at the same time is a sane practice. I have come to the conclusion that it is not necessary to stimulate the two sinuses at the same time. I doubt very much that one could produce death or do the individual any serious damage by stimulating one carotid sinus, even though we theoretically deprive the heart of its normal pacemaker and induce long periods of cardiac standstill. After cardiac standstill of certain lengths of time, the ventricles or bundle will initiate a rhythm of their own and will carry on the functions of the heart. In answer to Dr. Keith's question Were we able to induce the attacks in patients with epilepsy? I wish to say that we have examined many patients with idiopathic epilepsy and have not been able to reproduce these attacks. In no cases of epilepsy that we examined did we find the carotid sinus more sensitive than normal. In answer to the question What rôle does chemical stimulation play in producing these attacks? some investigators feel that chemical stimulation is an important factor in the carotid sinus reflex, but I have had no experience with chemical stimulation of the carotid sinus. I feel that there is still a great deal to be learned about this group of cases. I think that an advancement has been accomplished by definitely taking this group out of the class of epilepsy, in which class most of them had previously been considered.

The Pathogenesis of Experimental Hypertension Produced by Renal Ischemia

DR. HARRY GOLDBLATT, Cleveland: Exactly how the actual elevation of blood pressure due to renal ischemia is effected is not yet known. The possibility that the hypothetical pressor substance exerts its effect indirectly by some action on endocrine organs known to produce pressor substances, or by a synergistic action with such substances, is being investigated. Page has shown that hypophysectomy does not interfere with the development of this type of hypertension. Incomplete, too short and as yet too few experiments indicate that bilateral adrenalectomy does interfere with the phenomenon. The significance of this is not yet known. The whole study is being continued.

DISCUSSION

DR. WILBER E. POST, Chicago: This has been fascinating me since I first heard of Dr. Goldblatt's work, because so far as I know this is the first work in which hypertension is produced in which one might think that the damage is in the kidney alone and not in the generalized vascular system. For over twenty years I have been collecting histories and analyzing the medical story in patients who have died in uremia, trying to find those cases in which the kidney alone is damaged. The closest I have come to it has been in those cases, few in number, in which bilateral ureteral occlusion has resulted in permanent anuria. In those cases the blood pressure rose but slightly. Dr. Apfelbach did some work on dogs—I think it has been demonstrated before this society—in which he injected charcoal particles into the renal artery and thus was able to damage the kidneys, especially the glomeruli, which led to a degenerative process and ultimately to uremia, that is, renal failure, and yet in none of those dogs was he able to produce hypertension. It is with a great deal of interest that I shall follow this work of Dr. Goldblatt to see what may be revealed as the mechanism for the production of this hypertension.

Significance of Increased Blood Pressure in Pregnancy

DRS. JULIUS JENSEN and CARL WEGNER, St. Louis: Heretofore in cases of increased blood pressure in pregnancy, proper distinction has rarely been drawn between toxemia and hypertension. A closer study of this subject is revealing a close relation between the two. In pregnancy there is a distinct tendency for essential hypertension to become worse and remain worse. This is in line with certain physiologic knowledge regarding the effect of pregnancy on the cardiovascular system and also with Herrick's finding that the incidence of hypertensive heart disease is increased among women who have previously had eclampsia. This study concerns a follow-up examination of forty-nine women who had increased blood pressure during pregnancy. It was found that the tendency to increased

blood pressure following pregnancy was greater than in a control series. The tendency to increased blood pressure was accentuated by advanced age, increase in parity, overweight and family history of cardiovascular-renal disease.

The Peripheral Circulation in a Patient with Raynaud's Phenomena Before and After Cervical and Upper Dorsal Sympathetic Ganglionectomy and Ramisectomy

DRS. CARL A. JOHNSON and LOYAL DAVIS, Chicago: Studies were made on a married woman, aged 26, who presented moderately severe Raynaud's phenomena. Under uniform temperature conditions, observations were made in the fingers preoperatively and at various intervals postoperatively with regard to (1) skin temperatures, (2) blood pressures, (3) pulse, (4) body temperature and (5) peripheral pulse volume changes. In addition the effects of local heat and median nerve block were measured preoperatively and postoperatively. With these criteria as indexes of peripheral circulatory efficiency, the results indicated a return of the peripheral circulation to the preoperative level in sixteen days. The discussion covers similar results in other patients.

DISCUSSION

DR. GÉZA DE TAKÁTS, Chicago: These observations indicate that, following sympathectomy, vascular tonus is regained within sixteen days. This does not mean, however, that central or reflex stimuli of extrinsic or intrinsic origin can reach the blood vessels. The work of Carmichael in England, that of Richard Capps and my own observations show that the vessel which is sensitive to reflex stimulation by cold, pressure, pain and deep breathing is now uninfluenced by such reflexes and is put at comparative rest. Aside from this, another objective finding, which persists after operation, is the rise of oxygen saturation in the venous blood. The statement that peripheral circulation returns to the preoperative level in sixteen days must be modified to indicate that vascular tonus is regained; but the lasting vasomotor palsy institutes changes in circulation which favorably influence peripheral vascular disease.

DR. CARL A. JOHNSON, Chicago: In answer to a question as to whether the completeness of the sympathectomy was checked by loss of sweating, I wish to say that there was an absence of sweating in the operated arm as well as a Horner's syndrome of the eye of the operated side. With regard to the remarks of Dr. de Takáts, we merely wished to show by these experiments that the circulation as measured by the plethysmograph returns to the preoperative level in a comparatively short time. In this particular patient it was sixteen days, while in another patient it was twenty-one days. The vessels apparently regain their preoperative tone by mechanisms that are independent of the normal sympathetic vasoconstrictor tone.

Origin of Symptoms of Neurocirculatory Asthenia

F. K. HICK, PH.D., W. A. CHRISTIAN, M.D., and P. W. SMITH, PH.D., Chicago: Neurocirculatory asthenia showed in thirteen cases an inadequate arterialization of blood leaving the lungs. This supports the opinion of Haldane that part of the symptoms of these patients are from anoxemia. It supports the explanation that irregularities in breathing are from oxygen want. These patients are not uncommonly diagnosed as having hyperthyroidism. If one is able to establish the presence of an oxygen want, cases presenting basal metabolic rates artificially elevated by inhalation of oxygen may be separated from those showing a true elevation.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: Views have been changing with reference to these cases from time to time. This study represents an attempt to analyze the mechanism of the symptoms. From the paper it seems possible to attribute many of the symptoms to an oxygen want. When the patient is short of breath and uncomfortable he shows an oxygen want; when he feels well the oxygen want has disappeared. When the respiratory abnormalities appear there is oxygen want. When the patient breathes oxygen they are lessened. In short, there is a correlation between oxygen want and the patient's symptoms, including his respiratory irregularities. When one sees these patients make complete recoveries after a psychic or social adjustment, one is led to believe that one is dealing with a profound alteration in the individual's physiologic behavior and that one disabling element in this alteration is an arterial oxygen deficit.

DR. J. A. GREENE, Iowa City: I have been interested in studying the expiratory volume of the chest in patients and have observed a few cases of neurocirculatory asthenia. The expiratory chest volume increases with any stimulation of the respiration, and in some instances expiratory inflation becomes extreme. Under these circumstances the patient is unable to deflate the lungs. The great expiratory volume of the lungs and the rapid shallow breathing do not permit adequate ventilation; therefore the oxygen that has been stored in the inflated lungs becomes depleted, and cyanosis develops. Expiratory inflation is a normal response to respiratory stimulation, but in these cases this mechanism is exaggerated. This exaggerated response is apparently the cause of the shortness of breath and is an important factor in their cyanosis. The dyspnea and air hunger encountered in patients with cardiac failure are apparently due to a different mechanism.

DR. FORD K. HICK, Chicago: I think what happens to these patients is that the ventilation increases.

Early Effect of Total Thyroidectomy in Polycythemia Vera

DRS. LOUIS R. LIMARZI, ROBERT W. KEETON and LINDON SEED, with the technical assistance of DRS. FORD K. HICK and M. H. STREICHER, Chicago: Studies have failed to clarify the etiology of polycythemia vera, and the methods of treatment have not produced a lasting success. Total thyroidectomy was performed in a case of primary polycythemia because of the anemia and decreased blood volume that is found in some cases of spontaneous myxedema. Studies performed at intervals extending over a year following the total thyroidectomy show a gradual and progressive decrease in the blood volume and hematocrit value, a marked fluctuation in the number of erythrocytes with a gradual drop toward normal, and a change of the blood from a state of oxygen want to one with a normal value. These values have not as yet reached a normal one. It remains to be seen whether the persistence of the myxedema will result in normal hematologic values.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: In presenting these cases it is obvious that we are not offering a solution of the disease, but we believe that we have arrived at a most satisfactory method of control. The blood volume, the total circulating hemoglobin and the volume of packed cells have been reduced. The patients have lost many of their symptoms and are comfortable except for the pains due to their myxedema. They believe that they have received benefit from the operation.

DR. G. E. WAKERLIN, Louisville, Ky.: I have seen one patient with polycythemia vera who received x-ray therapy to the region of the pituitary with a subsequent fall in the red cell count to normal limits and symptomatic improvement lasting six months. A second set of treatments was followed by a similar drop. On the basis of the work presented it appears likely that the beneficial effect obtained was induced through a depression of the secretion of the thyreotropic hormone of the anterior pituitary. On the assumption that similar results could be obtained with the x-rays in other polycythemia vera patients, the question of irradiation of the pituitary region versus total thyroidectomy is raised. There are obviously certain disadvantages and advantages to both procedures.

DR. W. O. THOMPSON, Chicago: Total ablation of the thyroid is rather popular just now. From the point of view of pathologic physiology I should simply like to say that hyperthyroidism does not produce polycythemia. I cannot recall any case of hyperthyroidism in which polycythemia was present. Although anemia is present in myxedema, it usually does not clear up when sufficient thyroid is given to maintain the basal metabolism at normal for a long time. There would appear to be some other factor involved in the anemia than underfunction of the thyroid gland. While the results of the authors are interesting, I should therefore think that a lot of confirmative data should be collected before recommending total thyroidectomy in the treatment of polycythemia.

Current Medical Literature

AMERICAN

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American Heart Journal, St. Louis

12: 641-786 (Dec.) 1936

Commonest Cause of Hypertrophy of Right Ventricle—Left Ventricular Strain and Failure. W. P. Thompson and P. D. White, Boston. —p. 641.
Dissecting Aneurysms of Aorta: Report of Five Cases. T. M. Peery, Charleston, S. C.—p. 650.
Significance of Upright or Diphasic T Wave in Lead IV When It Is the Only Definite Abnormality in Adult Electrocardiogram. J. Edeiken, C. C. Wolferth and F. C. Wood, Philadelphia.—p. 666.
*Ischemic Pain in Exercising Muscles: Its Nature and Implications. A. H. Elliot and R. D. Evans, Santa Barbara, Calif.—p. 674.
Creatine Changes in Heart Muscle Under Various Clinical Conditions. G. Herrmann, G. Decherd and T. Oliver, Galveston, Texas.—p. 689.
Effect of Potential Variations of Distant Electrode on Precordial Electrocardiogram. C. E. Kossmann, with technical assistance of Bertha Rader, New York.—p. 698.
Hemiconstriction of Vascular System Associated with Cerebral Disease. W. J. Kerr and F. J. Underwood, San Francisco.—p. 713.
Electrocardiographic Changes Following Coronary Artery Ligation in Dogs. B. R. Harris and R. Hussey, New Haven, Conn.—p. 724.
Practical Application of Metabolic Exercise Tolerance Test to Treatment of Heart Disease. B. Blumenthal, Chicago.—p. 736.

Ischemic Pain in Exercising Muscles.—Elliot and Evans present observations which aim to test the hypothesis that lactic acid and the pain substance are identical. While a final answer cannot be given, it is shown that this hypothesis adequately explains the experimental results obtained and that at least production and disposal of both lactic acid and pain substance are subject to similar metabolic laws. Their conclusions are that: 1. The substance or substances responsible for pain in exercising ischemic muscles are relatively stable, may be present in the blood stream for an appreciable period following their release from such muscles, and may diffuse into tissues distant from their point of origin. 2. Such substance or substances are produced likewise in nonischemic exercising muscles, and their concentration in the blood stream following vigorous exercise is materially increased for an hour or longer. 3. Increase of lactate ion in the muscles of the forearm, brought about by whatever means, uniformly enhances the action of the pain substance produced by these same muscles. 4. Probably an increased concentration of lactate ion about the sensory nerve endings can by itself produce pain, such increase not necessarily exceeding metabolic limits. 5. It is possible that lactate ion is solely responsible for the production of ischemic pain, but release of other substances, which are beyond doubt subject to similar metabolic laws, may play a part, and these should be investigated.

American Journal of Cancer, New York

23: 681-904 (Dec.) 1936

Respective Rôles of Heredity and Somatic Mutation in Origin of Malignancy. W. F. Dunning, M. R. Curtis and F. D. Bullock, New York.—p. 681.
Studies on Tumor Metastasis: VII. Metastasis to Pineal Gland. S. Warren, Boston.—p. 713.
*Roentgen Diagnosis of Carcinoma of Pancreas. L. W. Paul, Madison, Wis.—p. 720.
Comparative Study of Carcinogenic Action of Certain Estrogenic Hormones. A. Lacassagne, Paris, France.—p. 735.
Pituitary Hyperplasia in Male Mouse After Administration of Estrin. H. Burrows, London, England.—p. 741.
Further Studies on Breaking Down of Resistance of Mice of One Strain to Transplantation of Tumors from Mice of Another Strain. M. R. Lewis and E. G. Lichtenstein.—p. 746.
*Case of Three Neoplasms. B. C. Portuondo, St. Louis.—p. 752.
Thyroid Adenoma of Ovary. P. J. Cantor and B. Kogut, Brooklyn. —p. 760.
New Glycolysis Activator. W. Fabisch, Palermo, Italy.—p. 764.

Roentgen Diagnosis of Carcinoma of Pancreas.—Paul's review of twenty-three cases of carcinoma of the pancreas shows that, while a majority give some evidence of the presence of the neoplasm when studied by means of a barium sulfate meal, this evidence is often difficult to evaluate and may even be misleading. A smaller number (34.8 per cent in the present series) will give unequivocal results which will be found to be highly accurate. More careful observation and correlation of the cases here reviewed, at the time of the examination, would probably have led to a higher number of correct diagnoses. Since the diagnosis depends mainly on the secondary effects of the tumor on the stomach and duodenum, the degree of accuracy will not be nearly as high as it is, for instance, in gastric carcinoma. Errors in diagnosis seem unavoidable; not only will carcinoma of the pancreas be missed but other lesions will occasionally be interpreted as such. A statement of the positive observations and the conclusion that these are compatible with a mass in the region of the pancreas will be as much as the roentgenologist can safely conclude in most cases.

Patient with Three Neoplasms.—Portuondo cites a case of three dissimilar types of tumor. Two of these and a metastasis from the third were within the cranial cavity. The hypernephroma was in all probability an example of a cell rest becoming neoplastic. The acoustic neurofibroma may also have had its origin in a cell rest which became active. The peripheral areas of the neurofibroma contained many whorls of spindle shaped cells, while in the more central portions there were only a few in a stroma composed of cells having small round nuclei and a fusing of membranes to form a tenuous background. The carcinoma of the pituitary would seem to have no demonstrable relationship with any cell rest. From the history it appeared that the acoustic neurofibroma was of about four years' standing. Visual disturbances were marked a year and a half prior to death, which indicates that the pituitary tumor was large enough at that time to cause ocular signs and symptoms. The weakness, listlessness and hypotension may have been due to the hypernephroma, and, since these symptoms were of some five years' duration, it would seem that the kidney tumor had been present about that length of time. The cerebellar metastasis may have been responsible for the slow slurring speech and the staggering gait. These occurred only about two months prior to death, which would indicate that the metastasis may have occurred at that time, although it may have been present longer without causing enough destruction of cerebellar tissue to produce signs. The added presence of the hypophyseal carcinoma suggests a special tendency to neoplasms, and it may be that this was the decisive factor.

American J. Digest. Dis. & Nutrition, Fort Wayne, Ind.

3: 731-812 (Dec.) 1936

Pyrexia in Gastric Carcinoma. H. A. Singer and F. Steigmann, Chicago. —p. 731.
Prognosis in Regional Ileitis. B. B. Crohn, New York.—p. 736.
*Possible Relation of Bacillary Dysentery to Nonspecific Ulcerative Colitis. A. Penner, New York.—p. 740.
Flexible Tube Gastroscopy: Technic: Preliminary Report. J. L. Borland, Jacksonville, Fla.—p. 744.
Experimental Study with Certain Tips Used on Wolf-Schindler Flexible Gastroscope. R. Schindler and J. F. Renshaw, Chicago.—p. 747.
Chronic Hypertrophic Ulcerative Gastritis Treated by Coutard's Method of Roentgen Therapy: Case Report with Unusual Course and Result. R. Schindler, Chicago.—p. 751.
Proteolytic Effect of Normal Gastric Juice on Beef Muscle Globulin, with Reference to Reported Action of Antianemic Intrinsic Factor. C. P. Emerson Jr. and O. M. Helmer, Indianapolis.—p. 753.
Changes Within Cells of Gastric Mucosa During Secretory Activity. A. J. Gitlitz and W. Levison, New York.—p. 756.
*Vitamin Deficiency in Prescription Diets of Diabetics: Study into Relationship of Diet Deficiency to Symptomatology as Observed in Eighty-Five Diabetics with Previous Dietary Treatment. A. Sindoni Jr., Philadelphia.—p. 759.
Vitamin B Complex Therapy in Chronic Arthritis. C. L. Steinberg, Rochester, N. Y.—p. 765.
Roentgen Diagnosis of Acute Intestinal Obstruction. J. Buckstein, New York, and L. Michaels, San Francisco.—p. 767.
What Drug Best Kills Hookworms? C. Lane, London, England.—p. 770.
Spastic Colon Diet. E. E. Cornwall, Brooklyn.—p. 773.
Anal Fissure, Anal Spasm and Anal Stenosis. E. A. Daniels, Montreal. —p. 775.

Bacillary Dysentery and Nonspecific Ulcerative Colitis.—The evidence that Penner adduced to prove the etiologic relationship between the dysentery group of bacilli and chronic ulcerative colitis consists mainly in the finding of positive blood agglutination reactions for this group of bacilli in cases of

chronic ulcerative colitis. This by itself cannot be considered adequate and conclusive proof of the relationship. Bacteriophagy, also employed by different investigators, has similar defects and cannot thus be considered satisfactory sole evidence of such a direct relationship. Thus far there have been too few studies carefully performed to permit one to evaluate the factor of dysentery infection in chronic ulcerative colitis. But from the available evidence it may be concluded that about 10 to 15 per cent of cases considered clinically to be idiopathic ulcerative colitis rightfully belong to the category of chronic bacillary dysentery. The residual still remain in the group of the etiologically unknown. The gross clinical features and course of chronic bacillary dysentery and of nonspecific ulcerative colitis resemble each other so closely that differentiation is impossible unless a case is traced to a known and proved epidemic—an unusual event. Similarly the sigmoidoscopic and roentgenologic features are so similar that they cannot serve as reliable methods of differentiation. And even on the necropsy table there are few if any features which serve as adequate criteria for purposes of differential diagnosis. Despite these close resemblances there are other features which make one suspect that the two conditions are not dependent on a common etiology. Thus, in contrast to the age distribution of bacillary dysentery, a preponderance of cases of nonspecific ulcerative colitis is found in the third and fourth decades with surprisingly few cases in infancy and early childhood. Another discrepancy is discovered in the sex incidence, in which it is found that the disease occurs about twice as often in women as in men. Furthermore, despite the widespread distribution of epidemic bacillary dysentery throughout the armies on all fronts during the World War, the preponderance of males is at present below the age of 40 and mainly in the third decade who did not see service overseas. In addition, chronic nonspecific ulcerative colitis is not as prevalent in central Europe as one would expect from the prevalence of acute epidemic bacillary dysentery during the late war. Finally, the well known lack of infectivity of nonspecific ulcerative colitis, for which no authority known to the author has ever claimed infective properties, must be contrasted with the equally well known infectivity of cases of chronic bacillary dysentery, as pointed out by Walko and Schürer and Wolff. It is his impression that, taking the ulcerative colitides as a group, there will be found definite etiologic agents responsible for a relatively small number and that the larger residual group consists of a heterogenic conglomeration of conditions with variable etiology.

Vitamin Deficiency in Diets in Diabetes.—Sindoni investigated the diets of eighty-five diabetic patients, who suffered also from disturbances involving the gastro-intestinal, genitourinary, gynecologic and cardiovascular systems as well as the visual field and oral, neurologic, skin, joints and endocrine glands. The patients were obese; 5.4 per cent suffered from gangrene and 3.5 per cent from malignancy. They were still ignorant of the true nature of their condition—a factor in the causation of increased diabetic complications and mortality. They were on restricted diets, but none adhered to their prescribed diets. Avitaminosis and hypovitaminosis were found in every one of the patients. These disturbances were not the result of one vitamin but of several, as amply evidenced by the patient's dietary history, symptoms and physical disturbances. Many physicians adjust insulin dosage to the carbohydrate allowance only, disregarding proteins, fats, vitamins and other elements of diet. There was a marked correlation in vitamin-deficiency diets to the rise in the incidence of diabetes, diabetic complications or concurrent diseases, but no correlation in overeating. These observations determined the author to correct the diet of these patients. He strongly advocates a more detailed study of the patient's diet history as well as of the symptomatology. The diabetic patient's diet should consist of natural foods, rich in the essential vitamins and other elements, since such diet will more often result in greater adherence by the patient to his instructions. The following advantages will be obtained: (1) better cooperation of patient with physician, (2) less complications, symptoms or physical disturbances, (3) less insulin, (4) better metabolic equilibrium, (5) better outlook on life, (6) prolongation of the span of usefulness, (7) greater resistance to infection, (8) avoidance of avitaminosis and hypovitaminosis and (9) more energy. Diets consisting of a variety of natural foods, such as vegetables, fruits, milk and its products, meat and cereals in prescribed proportions, with hygienic measures, such as sunshine, fresh air and exercise, will result in little need to worry about vitamin deficiency in diabetes.

American Journal of Public Health, New York

36: 1155-1252 (Dec.) 1936

Progress in Maternal and Child Welfare Under Social Security Act. Martha M. Eliot, Washington, D. C.—p. 1155.
Immunity to Virus Diseases. E. W. Goodpasture, Nashville, Tenn.—p. 1163.
Epidemiology and Symptomatology of Staphylococcus Food Poisoning: Report of Recent Outbreaks. G. A. Denison, Birmingham, Ala.—p. 1168.
Standardization of Typhoid and Paratyphoid Vaccines: I. Value of Gates Apparatus and Total Nitrogen Determinations. R. F. Feemster, L. H. Wetterlow and J. Cianciarulo, Boston.—p. 1176.
Mental Hygiene in Public Health. W. T. B. Mitchell, Montreal.—p. 1185.
Recent Advances in Control of Pneumonia. R. Cole, New York.—p. 1191.
Recent Advances in Administrative Technics. H. F. Vaughan, Detroit.—p. 1198.
Bacterial Limitations in Ground Fresh Meat. W. C. Elford, Portland, Ore.—p. 1204.
Diagnostic and Immunologic Tests of Rabies in Mice. L. T. Webster, New York.—p. 1207.
Bacteriologic Examination of Glassware or China for Sanitary Quality. C. R. Fellers, A. S. Levine and E. W. Harvey, Amherst, Mass.—p. 1211.
International Standardization of Biologic Products by League of Nations. G. W. McCoy, Washington, D. C.—p. 1215.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

36: 719-1006 (Dec.) 1936. Partial Index

Reliability of Roentgenographic Signs of Intracranial Tumor. M. C. Sosman, Boston.—p. 737.
Healing of Linear Fractures of Skull. R. G. Vance, Boston.—p. 744.
Cholesteatoma in Chronic Otitis Media. A. S. MacMillan, Boston.—p. 747.
Chronic Pneumonia in Young Infants. S. S. Sanderson, Detroit.—p. 757.
Multiple Tumors Within Spinal Canal: Diagnosis by Means of Lipiodol Injected into Subarachnoid Space (Myelography). J. D. Camp, Rochester, Minn.—p. 775.
*Hodgkin's Disease and Allied Conditions of Bone. R. Dresser and J. Spencer, Boston.—p. 809.
Osteopetrosis: Report of Eight Cases Occurring in Three Generations of One Family. C. N. McPeak, Fitchburg, Mass.—p. 816.
*Recurrent Idiopathic Spontaneous Pneumothorax. L. K. Sycamore, Hanover, N. H.—p. 844.
Drugs as an Aid in Roentgen Examination of Gastro-Intestinal Tract: Use of Mecholyl, Physostigmine and Benzedrine in Overcoming Atonicity, Sluggishness of Peristalsis and Spasm. M. Ritvo, Boston.—p. 868.
Nonobstructing Malignant Tumors of Small Bowel: Report of Five Cases. J. R. Lingley, Boston.—p. 902.
Use of Thorium Dioxide in Roentgenographic Study of Liver Abscess. R. J. Reeves, Durham, N. C.—p. 923.
Roentgenographic Diagnosis of Soft Tissue Tumors Excluding the Breast. J. R. Carty, New York.—p. 932.
Multiple Calcifications in the Ovary (Psammoma of Ovary). N. W. Loud, New Britain, Conn.—p. 936.
Advanced Cancer of the Head and Neck. C. L. Martin, Dallas, Texas.—p. 954.
Eighteen Months' Experience with 400 Kilovolts Constant Potential Deep Therapy: Preliminary Report. D. Steel, Cleveland.—p. 963.
Direct Roentgen Irradiation of Deep-Seated Tumors: Preliminary Report. S. Moore, St. Louis.—p. 969.

Hodgkin's Disease and Allied Conditions of Bone.—Dresser and Spencer have seen sixty-six cases of Hodgkin's disease with 120 concomitant lesions of the bone. The greatest number of cases in their series were in the third and fourth decades. The youngest was 11 years of age, the oldest 68. The two sexes were affected equally. The roentgen picture usually simulates that of a metastatic malignant condition. It may, however, be confused with Ewing's tumor, osteogenic sarcoma, bone cyst, osteomyelitis or other inflammatory bone conditions. In no case is the roentgenogram entirely characteristic. Of the twenty-nine cases with involvement of the vertebrae, the process was destructive in all but two. As in malignant metastasis, the vertebral bodies were chiefly involved with preservation of the intervertebral spaces. In the pelvis the process is usually destructive. One generally finds large areas of bone erosion with sharply defined margins. The changes in the extremities are much more variable than in

the bones of the axial skeleton. The lesions usually occur in the ends of the long bones, most frequently in the femur. The midportion of the shaft, however, may be invaded. The process is primarily destructive and originates in the medulla. There may be varying degrees of expansion of the cortex, erosion of the cortex and periosteal proliferation. The picture may simulate a primary bone tumor, a bone cyst or an inflammatory process. The ribs and sternum are favorite sites for bone infiltration. The process in the sternum is usually destructive, but there may be bone proliferation and expansion. Only destructive changes in the bones of the skull have been observed. The areas are usually circular with sharply defined margins, but the borders may be irregular and ill defined. Frequently there is a soft tissue tumor directly overlying the area of destruction. The shoulder girdle is involved in a small percentage of cases. Bone involvement has usually been considered a late manifestation of the disease; however, in the authors' cases the bones were involved early in the course of the disease in nearly 25 per cent. Extension to the bone occurs by direct invasion from adjacent diseased nodes or by a metastatic dissemination presumably through the blood stream. A primary Hodgkin's disease of bone without involvement of lymph glands, spleen or liver has not been observed. The response of bone lesions to radiation treatment is exceedingly variable. Although striking regression of the disease is occasionally observed, the osseous foci are, on the whole, less radiosensitive than the glandular foci. The sternal cases have shown the most satisfactory response. Potentials of at least 200 kilovolts are superior to the lower voltages. Small divided daily exposures of from 200 to 300 roentgens (measured in air) with total doses of from 600 to 1,200 roentgens per port have been found to be fully as effective as larger doses, and this method possesses the advantage that the treatment may be repeated frequently. Relief of pain is very striking in many cases, and symptomatic improvement is frequently obtained even though there is no evidence of bone regeneration. Although much can be done in a palliative way, the prognosis is grave. The longest duration of life occurred in those patients presenting sternal tumors, four of whom lived five years or more.

Recurrent Idiopathic Spontaneous Pneumothorax.—Sycamore reports a case of recurrent idiopathic spontaneous pneumothorax of the relapsing type, with a pronounced tension pneumothorax in one attack. The emphysematous bulla, which was apparently the etiologic factor, was plainly visible on the roentgenogram. In only one of Kjaergaard's cases was the lesion demonstrable roentgenographically. The patient has had five attacks of spontaneous pneumothorax in three years. The presence in the pathologic specimen of fibrous tissue and anthracotic pigment and the absence of any bronchial structures justified a diagnosis of emphysematous bleb rather than solitary lung cyst. Operation was performed for the removal of the emphysematous bleb.

Archives of Dermatology and Syphilology, Chicago

35: 1-202 (Jan.) 1937

William Allen Pusey—A Leader in Organized Medicine. O. West, Chicago.—p. 5.
Id.—The Editor. M. Fishbein, Chicago.—p. 7.
Id.—The Educator. D. J. Davis, Chicago.—p. 10.
Id.—The Historian and Litterateur. J. B. Herrick, Chicago.—p. 14.
Id.—The Citizen. R. C. Dawes, Chicago.—p. 19.
Pusey's Contributions to Cutaneous Medicine and Syphilis. C. G. Lane, Boston.—p. 21.
William Allen Pusey at Close Range. H. Rattner, Chicago.—p. 25.
Argyria. A. W. Stillians, Chicago.—p. 67.
New Arsphenamine Synthetics in Treatment of Syphilis: Consideration of Test Procedure and of New Drug (Triarsen). J. H. Stokes and H. Beerman, Philadelphia.—p. 78.
*Ulcerative Hodgkin's Disease of Skin. F. E. Senear and M. R. Caro, Chicago.—p. 114.
External Causes of Dermatitis: List of Irritants. L. F. Weber, Chicago.—p. 129.
Necrobiosis Lipoidica Diabeticorum: Report of Case with Clinical, Pathologic and Biochemical Observations. B. Usher and I. M. Rabinowitch, Montreal.—p. 180.
*Calcium Metabolism in Scleroderma. T. Cornbleet and H. C. Struck, Chicago.—p. 188.

Ulcerative Hodgkin's Disease of Skin.—Senear and Caro present a case of Hodgkin's disease with the ulcerative type of cutaneous lesion, which illustrates the difficulty of diagnosis often presented by the ulcerative manifestations of Hodgkin's disease. Ulceration may be said to occur in Hodgkin's disease in three different ways. The first is the type in which there are a number of cutaneous or subcutaneous nodules showing the typical histopathologic structure, in some of which ulceration develops. In the second type the skin is affected as a result of involvement secondary to lymphogranulomatous changes in underlying structures. In the third form there develop in the skin, either as the primary manifestation of the disease, or subsequent to but not as a direct extension of glandular involvement, large infiltrates or tumors rather than the small nodules which characterize the first variety. In the second and the third types the ulcers are, as a rule, extensive. It is particularly with these larger ulcerations that the authors are concerned, because it is when they are present that the greatest confusion in differential diagnosis is likely to arise. This is particularly true in cases in which the infiltration and subsequent ulceration develop before an enlargement of the palpable lymph node areas is apparent. The ulcers usually develop and extend rapidly up to a certain point; then extension ceases or is slow. The number, form, size and location of the ulceration vary. As a rule the margins are elevated; often they show a somewhat padlike elevation. The margins may be undermined and flabby or sharply punched out to resemble a gumma. Usually the ulcers are deep and have an uneven floor covered with abundant purulent or necrotic material or granulation tissue. The base, as a rule, is soft. In most cases there is a fetid odor. In some cases the ulcers develop in a large plaque of infiltration, while in others they develop from the breaking down of underlying glands, after which an extensive infiltration of the tissues surrounding the ulcer may take place. In the present case this secondary infiltrate covered almost the entire right side of the chest. As a rule the ulcers bleed freely when touched. Pain of variable degree, at times severe, is usually present. The ulcers may simulate closely the lesions of syphilis, sarcoma, mycosis fungoides, epithelioma and tuberculosis.

Calcium Metabolism in Scleroderma.—Cornbleet and Struck have encountered eleven patients having scleroderma. They determined over an extended period the calcium and phosphorus balances in two patients in whom there was unquestionably definite retention of both calcium and phosphorus beyond the amount conceivably necessary for growth of bone. Probably much of the retained calcium was deposited in the skin and muscular tissue. The disturbance of calcium metabolism may be so severe in some cases as to cause transfer of calcium from the fixed stores of the body—the bones—to the soft tissues. Not all patients with scleroderma may show retention of calcium and phosphorus but, when all facts are considered, it seems reasonable to believe that retention of calcium may be a fairly general feature of the condition. Certainly all investigators seem to agree that the calcium metabolism is affected. Shortly after administration of large doses of vitamin D was begun in the two cases in which balance studies were made the amount of calcium in the urine increased greatly, while that of the feces remained relatively unchanged. This is the characteristic effect of massive doses of vitamin D. The low calcium content of the urine helps to account for the retention of the element, and the increase in the output is sufficient to explain the negative balance observed during treatment. This is merely a symptomatic treatment, for there is no evidence that scleroderma is a deficiency disease. Further, the doses of vitamin D (from 200,000 to 300,000 international units) used are far above those required for normal growth or calcification or for recovery from rickets. From the clinical and chemical results in the eleven cases it seems fair to say that the abnormal calcium deposits in the skin were reduced by the vitamin D therapy before any appreciable amount of calcium was removed from the bones. A hypothesis is offered: that scleroderma is initially due to a toxin which injures the collagen syncytium and that these injured tissues secondarily take up calcium. This deposition of calcium may account for the frequently observed positive balance in scleroderma. Massive doses of vitamin D produce a negative balance, apparently at the expense of the calcium deposited in the collagen and muscle.

Archives of Internal Medicine, Chicago

58: 957-1124 (Dec.) 1936

*Calcium and Iodine Metabolism in Thyroid Disease. I. D. Puppel and G. M. Curtis, Columbus, Ohio.—p. 957.
Specific Infection Characterized by Multiple Ulcers of Small Intestine. L. M. Johnston, Nashville, Tenn.—p. 978.
Clinical Aspects of Periarteritis Nodosa. Rose Spiegel, New York.—p. 993.
Cardiac Output in Polycythaemia Vera. Grace Goldsmith, Rochester, Minn.—p. 1041.
Monocytic Leukemia: Report of Eight Cases. T. G. Klumpp and T. S. Evans, New Haven, Conn.—p. 1048.
Comparative Diuretic Response to Clinical Injections of Various Mercurials. T. Sollmann and Nora E. Schreiber, with collaboration of H. N. Cole, Cleveland.—p. 1067.
*Untoward Effects of Diuresis, with Especial Reference to Mercurial Diuretics. D. Poll and J. E. Stern, New York.—p. 1087.
Function of Large Intestine of Man in Absorption and Excretion: Subject with Ileostomy Stoma and an Isolated Colon. C. S. Welch, E. G. Wakefield and Mildred Adams, Rochester, Minn.—p. 1095.

Calcium and Iodine Metabolism in Thyroid Disease.—Puppel and Curtis determined the calcium and iodine balance pretherapeutically of one patient with hypothyroidism, two normal subjects and two patients with exophthalmic goiter. The calcium and the phosphorus content of the blood of all five subjects varied within normal limits. In the patient with hypothyroidism there was an increased retention of calcium over normal. In the two normal subjects on a low calcium diet the calcium balance was negative. In the two patients with exophthalmic goiter there was an increase in the amount of calcium excreted. In one the increase was almost entirely in the feces. In the other the increase was in both the urine and the feces. This resulted in a continuous negative calcium balance greater than normal. In the two patients with exophthalmic goiter the iodine balance was less than normal even in the presence of an intake of iodine which was at least normally adequate. The increased fecal excretion of iodine was greater than the increased urinary excretion of iodine, thus showing a difference from normal persons and from subjects with hypothyroidism. In the patient with hypothyroidism a decrease in the excretion of calcium accompanied the decrease in the circulating iodine. In the two patients with exophthalmic goiter an increase in the excretion of calcium accompanied the increase in the circulating iodine. In the patient with exophthalmic goiter maintained on a low intake of calcium, observations during three periods of three days each revealed that the iodine balance was continuously negative and that the calcium balance varied directly with the iodine balance. In the patient with exophthalmic goiter maintained on a high intake of calcium, observations during five periods of three days each showed that the iodine balance remained at a level definitely lower than that of the two normal controls. The calcium balance varied inversely with the iodine balance. In the other subjects maintained on a low calcium diet, observations during nine of twelve periods of three days each showed the calcium balance to vary directly with the iodine balance.

Untoward Effects of Diuresis.—The syndrome discussed by Poll and Stern is seen in connection with diuresis and is characterized by preliminary symptoms of weakness, restlessness and mental confusion (sometimes progressing to delirium and psychosis), which may be followed by apathy, coma and in some cases death. The turgor of the tissues may become poor, the tongue exceedingly dry and thirst extreme. Any or all of these phenomena should be borne in mind when a patient who has been subjected to diuretic therapy appears to be failing. The clinical picture may be produced without the use of mercurial diuretics and in no sense are these valuable drugs indicted. However, the syndrome is more likely to occur when mercurial diuretics are used, since their ability to cause rapid dehydration is more marked than that of any other available diuretic agent. When a patient who is subjected to dehydration therapy begins to fail, one must endeavor to decide whether any of the following factors are present and, if so, whether they are etiologic, contributory or only incidental to the clinical picture: irremediable myocardial insufficiency, fresh coronary thrombosis, exacerbation of rheumatic carditis, pulmonary infarction, infection of the respiratory tract, true renal insufficiency, cerebral vascular accident, excessive use of sedatives and the syndrome under discussion. Excessive use of sedatives is of great importance, as the edematous patient with myocardial insufficiency is often extremely restless and large doses of sedatives are required to induce quietude and thus spare the myocardium. The stupor induced by rapid dehydration is too readily attributed to the use of sedatives. The authors' study of their case reports and of those recorded by other observers provides no entirely adequate basis for the prediction and exclusion of patients unfavorable for drastic dehydration therapy. The following factors should be taken into consideration and particular care should be exercised in their presence: old age, advanced atherosclerosis and cachexia. If, despite extreme precautions, untoward symptoms develop, therapy should be begun as soon as the syndrome is diagnosed or suspected. It consists of (1) the administration of water—by mouth if possible; (2) the administration of sodium chloride by mouth, at first in capsules and later as a 0.1 per cent solution, which is effective in the restoration of the sodium content of the blood, and (3) parenteral administration, if the foregoing methods are impossible. The intravenous and subcutaneous methods of treatment are not as effective as the oral route. If therapy is delayed, the condition is no longer reversible and may end fatally.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17: 737-800 (Dec.) 1936

*Treatment of Chronic Meningococcic Infections by Artificial Fever. A. E. Bennett, J. P. Person and E. E. Simmons, Omaha.—p. 743.
Studies of Comparative Deep Tissue Heating (Hot Air, Hot Water, Short Wave Diathermy and Electromagnetic Induction). S. Benson and W. Bowman, Chicago.—p. 749.
Biologic Sources of Radioactivity: Part II. R. A. Watters, Reno, Nev.—p. 753.
Improved Boot and Cuff for Suction Pressure Apparatus. L. H. Hitzrot and A. J. Rawson, Philadelphia.—p. 761.
Spa Treatment of Chronic Heart Diseases and Their Complications. F. M. Groedel, New York.—p. 763.
Massage in Management of Fractures. M. A. Levine, Los Angeles.—p. 770.

Treatment of Meningococcic Infections by Artificial Fever.—The morphologic and biologic similarity between gonococci and meningococci led Bennett and his associates to experiment with thermal death time studies of the latter organism. Their observations obtained so far by water bath studies indicate that these organisms likewise can be destroyed by heat which the body can safely tolerate. The meningococci seem to be very heat labile when first transplanted to broth mediums but become more heat resistant through each successive generation on a given medium. This phenomenon makes it difficult to set a standard death time for a specific strain. In general, however, the authors have been able to destroy most of the strains at 41.5 C. (106.8 F.) within eight hours. The extinction method for determination of thermal death time was used because it adapts itself to the effect of sustained heat at a given temperature for a definite length of time. Clinically, two patients with proved chronic meningococcic infection, one of whom had two attacks of meningitis, have been cured by artificial physical fever therapy without other therapeutic procedures. Further clinical trial of this method is recommended in subacute or chronic meningococcic infections, especially in cases of meningitis not responding to serum therapy. The authors feel that in the acute fulminating types of meningococcic meningitis fever therapy is contraindicated.

Arkansas Medical Society Journal, Fort Smith

33: 135-150 (Jan.) 1937

Retrodisplacement of Uterus. M. C. Hawkins Jr., Searcy.—p. 135.
Common Foot Complaints. P. W. Carruthers, Little Rock.—p. 136.
*Insulin Protamine in Treatment of Diabetes. A. A. Blair, Fort Smith.—p. 139.

Protamine Insulin in Treatment of Diabetes.—Blair treated four cases with protamine insulin, each of which had been under careful management for from three to nine years. The ages ranged from 17 to 54 years. The slow action of protamine insulin can be partially overcome by using protamine insulin one hour before breakfast instead of the usual fifteen to twenty minute period allowed for the regular insulin. The fact that the diabetic patient is harder to keep sugar free in the morning than at any other time of the day indicates that the morning dose should always be relatively larger. A diet that contains plenty of fruit affords an easily utilized form of

carbohydrate and is quite an advantage at noon to check the gradual fall in the blood sugar when fairly large doses of protamine insulin are used early in the morning. A lower and more uniform blood sugar curve can be maintained with protamine insulin. The slow breakdown and absorption over a period of twelve hours should be borne in mind and the new preparation not recommended in preference to regular insulin in diabetic coma. However, the knowledge of its delayed absorption should relieve the patient from the midnight dose of insulin, virtually doing with two doses of protamine insulin what was expected of four doses of regular insulin and at the same time avoiding sharp breaks in the blood sugar curve.

California and Western Medicine, San Francisco

45: 449-520 (Dec.) 1936

Practica Medici Moderni. C. D. Leake, San Francisco.—p. 455.
Acute Appendicitis: Clinical Review of One Thousand Consecutive Cases. G. K. Rhodes, W. Birnbaum and M. J. Brown, San Francisco. —p. 458.
Thrombosis and Embolism: Preoperative and Postoperative Care in Their Prevention. J. H. Breyer, Pasadena.—p. 463.
Whooping Cough: Its Prophylaxis and Treatment. J. M. Frawley, Fresno.—p. 467.
Practical Quantitative Perimetry. D. O. Harrington, San Francisco. —p. 473.
Silicosis. P. H. Pierson, San Francisco.—p. 477.
Traumatic Rupture of Uterus in Advanced Pregnancy. E. M. Lazard and F. E. Kliman, Los Angeles.—p. 482.
Rhinophyma. W. C. Crabtree, San Diego.—p. 485.
Scabicidal Drugs: Experimental Study. H. J. Templeton and H. V. Allington, Oakland.—p. 487.
Urinary Tract Infection with "Clear Urine." J. R. Dillon, San Francisco.—p. 489.

Canadian Public Health Journal, Toronto

27: 477-528 (Oct.) 1936

Tuberculosis and the Medical Officer of Health. A. E. Ranney, North Bay, Ont.—p. 477.
Influencing Factors in Control of Tuberculosis in Ontario. G. C. Brink, Toronto.—p. 482.
*New Method of Detecting Staphylococcus Enterotoxin. C. E. Dolman, Vancouver, B. C.; R. J. Wilson and W. H. Cockcroft.—p. 489.
Small Outbreak of Staphylococcic Food Poisoning in Vancouver. C. E. Dolman, Vancouver, B. C.—p. 494.
Progress in Cancer Control in Saskatchewan. R. O. Davison, Regina, Sask.—p. 498.
Importance of Accuracy in Vital Statistics. S. J. Streight, Toronto. —p. 502.
Milk Control Regulations in Ontario, 1936. A. E. Berry, Toronto. —p. 504.

Method for Detecting Staphylococcus Enterotoxin.—Dolman and his colleagues report the suitability of kittens as test animals for the detection of enterotoxin, or the food poisoning substance, in staphylococcus filtrates. As little as 0.5 cc. intraperitoneally of a potent filtrate will cause a severe reaction in a kitten weighing from 350 to 550 Gm. and from 6 to 8 weeks of age, while 3 cc. of filtrate from innocuous strains, or of broth treated with formaldehyde, will occasion no upset. Adult cats may be used for the test, but they are harder to handle and seem relatively less sensitive than kittens.

Indiana State Medical Assn. Journal, Indianapolis

29: 1-58 (Jan.) 1937

Diagnosis and Treatment of Early Syphilis. F. E. Senear, Chicago. —p. 1.
Diabetes Mellitus as Comparatively Simple Clinical Problem. B. M. Edlavitch, Fort Wayne.—p. 7.
*Surgical Aspects of Hematuria. J. F. Balch and W. N. Wishard Jr., Indianapolis.—p. 13.
Asthma Due to House Dust. L. G. Montgomery, Muncie.—p. 18.
Pernicious Anemia and Its Treatment. P. J. Fouts, Indianapolis.—p. 22.
What Can the Woman's Auxiliary Contribute to the Practice of Medicine? C. P. Emerson, Indianapolis.—p. 24.

Surgical Aspects of Hematuria.—Balch and Wishard state that a painless hematuria is dangerous and often means that a malignant condition is present. The entire ureter as well as the kidney should be removed in papillary tumors of the renal pelvis. Pyelolithotomy gives a 1 and nephrolithotomy a 10 per cent mortality. Hematuria associated with pyuria means renal tuberculosis until proved otherwise. About 95 per cent get well without surgical intervention. The exact cause of bleeding should be investigated in all instances of gross hematuria. Cases of bladder hemorrhage may be classified into those of slight severity in which orderly urologic examination may be done at an elective time and those of severe bleeding demanding immediate attention. In nontraumatic bladder bleeding, treatment consists of emptying the bladder of clots and stopping hemorrhage, dealing with the underlying disease at a more opportune time if possible. In traumatic bleeding the bladder must be drained surgically if rupture is present. Contusion of the bladder without break of its walls may at times be treated by evacuation of clots and indwelling catheter drainage.

Journal of Bacteriology, Baltimore

32: 589-696 (Dec.) 1936

Attempts to Increase Heat Resistance of Bacterial Spores. F. T. Williams, Madison, Wis.—p. 589.
Glycerol and Carbohydrate Utilization by Mycobacterium Tuberculosis. A. G. Wedum, Chicago.—p. 599.
Growth of Micro-Organisms on Mediums Exposed to Ultraviolet Radiations. E. L. Pratt, Cambridge, Mass.—p. 613.
Lytic Action of Certain Strains of Hemolytic Streptococci on Fresh Sterile Kidney and Other Tissues. Beatrice Carrier Seegal and D. Seegal, New York.—p. 621.
*Comparative Study of Hemolytic Streptococci Isolated from Throats of Residents of New Orleans and New York. P. Teiger and Beatrice Carrier Seegal, New York.—p. 631.
Preparation of Silicic Acid Jellies for Bacteriologic Mediums. J. H. Hanks and R. L. Weintraub, Washington, D. C.—p. 639.
Pure Culture Isolation of Ammonia-Oxidizing Bacteria. J. H. Hanks and R. L. Weintraub, Washington, D. C.—p. 653.

Hemolytic Streptococci Isolated from Throats.—Teiger and Seegal compared certain biologic and immunologic characteristics of sixty-three strains of hemolytic streptococci isolated from residents of New Orleans with 103 strains isolated in New York City. The New Orleans strains came from cases of acute nephritis and acute infection of the upper respiratory tract and from normal throats. The New York strains came from cases of acute nephritis and chronic or healed nephritis, with or without acute pharyngitis. The organisms were examined for their fermentation of lactose, mannitol and salicin, their hemolysis in blood pour plates, their production of a soluble hemolysin and skin toxin, their hydrolysis of sodium hippurate and their final p_H in dextrose broth. Their membership in group A of Lancefield also was determined. By these tests no difference was found between the hemolytic streptococci isolated from the throats of individuals residing in New Orleans or in New York.

Journal of Experimental Medicine, New York

65: 1-176 (Jan.) 1937

Does Gonadotropic Hormone Induce Antibodies or Antihormones? F. Sulman, Jerusalem, Palestine.—p. 1.
Analysis of Mitosis in Liver Restoration. A. M. Brues and Beula B. Marble, Boston.—p. 15.
Capillary Supply in Normal and Hypertrophied Hearts of Rabbits. R. A. Shipley, Louise J. Shipley and J. T. Wearn, Cleveland.—p. 29.
Production of Hemorrhagic Necrotic Skin Lesions in Rabbit by Means of Haemophilus Influenzae and Haemophilus Pertussis. E. Witebsky and H. Salm, New York.—p. 43.
Studies on Somatic C Polysaccharide of Pneumococcus: I. Cutaneous and Serologic Reactions in Pneumonia. T. J. Abernethy and T. Francis Jr., New York.—p. 59.
Id.: II. Precipitation Reaction in Animals with Experimentally Induced Pneumococcic Infection. T. J. Abernethy, New York.—p. 75.
Experimental Attempts to Increase Blood Supply to Dog's Heart by Means of Coronary Sinus Occlusion. L. Gross, L. Blum and Gertrude Silverman, New York.—p. 91.
Immunologic and Chemical Investigations of Vaccine Virus: V. Metabolic Studies of Elementary Bodies of Vaccinia. R. F. Parker and C. V. Smythe, New York.—p. 109.
Bactericidal Properties of Ultraviolet Irradiated Lipids of Skin. F. A. Stevens, New York.—p. 121.
Vitamin C Therapy and Prophylaxis in Experimental Poliomyelitis. C. W. Jungeblut, New York.—p. 127.
*Bactericidal Action of Human Serum on Hemolytic Streptococci: I. Observations Made with Serum from Patients with Acute Infections and from Normal Individuals. W. S. Tillett, Baltimore.—p. 147.
*Id: II. Factors Which Influence Phenomenon in Vitro. W. S. Tillett, Baltimore.—p. 163.

Action of Human Serum on Hemolytic Streptococci.—Tillett discovered that serums obtained from patients at the time of acute active infections were bactericidal for hemolytic streptococci in every instance. The observations were made with serums from twenty-five patients. The group consisted of cases of pneumococcus, hemolytic streptococcus, staphylococcus, meningococcus, tubercle bacillus and malarial infections; the etiology of the diseases in other patients was either uncertain or may have been a mixed infection. In serums taken from the same group of patients, soon after recovery or marked improvement had taken place, the streptococcidal property was

absent or greatly diminished in potency. By comparative tests made with serums from twenty healthy adults, the streptococcidal action was not demonstrable. Three different strains of Streptococcus haemolyticus of the beta type were employed in the experiments. Differences in susceptibility of the strains to the killing power of the serum were noted.

Factors That Influence Action of Human Serum on Hemolytic Streptococci.—Tillett points out that, although serums derived from patients at the time of acute, active infection were found to be capable of destroying hemolytic streptococci under aerobic conditions, the organisms retained viability when the tests were performed anaerobically. Within the limitations of the experimental procedures that were employed, the aerobic or anaerobic effect was found to be a reversible reaction. Heating serums at 60 C. for one hour inactivated the streptococcidal element in most instances but not in every case; heating at 56 C. for one hour impaired the lethal power of half of the specimens that were tested. Serums retained the capacity to destroy hemolytic streptococci when kept in the icebox for three weeks; a slight diminution in killing power was observed after four weeks.

Journal Industrial Hygiene and Toxicology, Baltimore

18: 689-804 (Dec.) 1936

Photo-Electrical Estimation of Konimeter Dust Spots. W. H. Walton, Birmingham, England.—p. 689.
Dust Control in Granite Industry. J. D. Leitch, Toronto.—p. 699.
Practical Method for Rapid Determination of Lead When Found in Atmosphere. G. C. Harrold, S. F. Meek and F. R. Holden, Detroit. —p. 724.
Toxic Effects of Low Concentrations of Carbon Disulfide. F. H. Wiley, W. C. Hueper and W. F. von Oettingen, Wilmington, Del.—p. 733.
Hospital Air Conditioning. C. P. Yaglou, Boston.—p. 741.
Application of Air Conditioning in Normal Life. P. Drinker, Boston. —p. 767.
Air Borne Infection. H. D. Chope and W. G. Smillie, Boston.—p. 780.

Journal of Thoracic Surgery, St. Louis

6: 125-236 (Dec.) 1936

Nontuberculous Abscess of Lung: Etiology, Treatment and Results in Ninety Cases. E. C. Cutler and R. E. Gross, Boston.—p. 125.
*Treatment of Lung Abscess: Report of 100 Consecutive Cases. C. I. Allen and J. F. Blackman, Detroit.—p. 156.
Resection of Calcified Pulmonary Abscess (or Tuberculosis) Simulating Tumor: Three Cases. E. A. Graham and J. J. Singer, St. Louis. —p. 173.
Acute Infections of Mediastinum, with Especial Reference to Mediastinal Suppuration. H. Neuhof, New York.—p. 184.
Etiologic Factors in Pathogenesis of Putrid Absces of Lung. L. Stern, New York.—p. 202.
Abscess of Mediastinum. R. C. Fisher, New York.—p. 212.
Use of Phrenic Neurectomy Combined with Artificial Pneumoperitoneum for Collapse of Adherent Tuberculous Lung. M. Joannides and O. C. Schlack, Chicago.—p. 218.
Chylothorax: Case Report. O. A. Beatty, Glasgow, Ky.—p. 221.

Treatment of Lung Abscess.—To determine means of reducing the high mortality from lung abscess, Allen and Blackman present an analysis of 100 cases, in which the death rate was 34 per cent. For the first fifty patients it was 42 per cent and for the last fifty, all of whom were treated during the last five years, it was 26 per cent. Of the thirty-four patients who died, however, six died of carcinomas that were producing abscesses by obstruction. Of the remaining ninety-four cases therefore the mortality rate was 29.7 per cent. This reduced mortality is the result of the facts learned in the treatment of the earlier cases and from the experience of others. It may well be attributed to earlier diagnosis and institution of treatment, closer cooperation between the internist and the surgeon, more accurate localization, and the earlier institution of more radical treatment when conservative treatment has failed. With continued attention to this problem, further reduction in the mortality rate may be anticipated. Conservative treatment should not be continued unless progressive improvement is being accomplished, regardless of the time element. Phrenic nerve crushing is sufficiently valuable to make its use advisable in certain selected cases. Treatment by bronchoscopic drainage probably is for those abscesses which are caused by foreign bodies. Operative drainage should always be done in two stages. A wide area for drainage should be established. The drainage tract down to the abscess should be made with the actual cautery. Tube drainage of complicating empyema is of value when the patient's condition is so critical as to make a more radical operation too hazardous.

Missouri State Medical Assn. Journal, St. Louis

34: 1-48 (Jan.) 1937

Obligations of the Hospital to Its Interns. B. G. Hamilton, Kansas City.—p. 1.
Cardiac Emergencies. D. Luten, St. Louis.—p. 3.
Abrasions and Contusions. W. L. Allee, Eldon.—p. 4.
Analgesics, Sedatives, Hypnotics. B. Y. Glassberg, St. Louis.—p. 6.
Opportunities of Rural Practice. F. G. Mays, Washington.—p. 8.
When Therapeutic Pneumothorax for Tuberculosis Should Be Instituted and When It Should Be Discontinued. H. I. Spector, St. Louis. —p. 9.
The Common Duct Stone. L. Rassieur, St. Louis.—p. 13.
Autopsies: Analysis of Percentage Increases. W. E. B. Hall, St. Joseph.—p. 15.

New England Journal of Medicine, Boston

215: 1261-1322 (Dec. 31) 1936

Study and Treatment of Heart Disease at the Massachusetts General Hospital from 1821 to 1936. P. D. White, Boston.—p. 1261.
*Evaluation of Signs of Active Rheumatic Fever, with Especial Reference to Erythrocyte Sedimentation Rate and Leukocyte Count. B. F. Massell and T. D. Jones, Boston.—p. 1269.
Carcinoma of the Breast in Young Women. G. W. Taylor, Boston. —p. 1276.
*Rôle of Scurvy in Etiology of Chronic Subdural Hematoma. T. H. Ingalls, Boston.—p. 1279.
Brucellosis (Undulant Fever): Interesting and Important Facts About Disease with Report of Severe Case Occurring in Boston Physician. J. F. Casey, Boston.—p. 1282.
Milk Modification and Infant Constitution. I. N. Kugelmass, New York. —p. 1285.
Medical Service in Vermont: Some Changes in Forty Years. L. W. Burbank, Cabot, Vt.—p. 1292.

Signs of Active Rheumatic Fever.—Massell and Jones base their remarks on a study of 178 patients with active rheumatic fever. In 163 of these cases an analysis has been made of the routine laboratory tests and a comparison made of the leukocyte count and erythrocyte sedimentation rate in respect to their value as tests for active rheumatic fever. Also the clinical manifestations have been analyzed in seventy-three patients with clinical evidence of rheumatic fever, and the relation of laboratory tests to the clinical signs has been determined. The leukocyte count and corrected sedimentation index are helpful and often essential for the determination of low grade rheumatic fever. In the majority of instances, after the clinical manifestations of the disease subsided, one or both of these tests continued at an elevated level for from several weeks to many months. As tests for low grade rheumatic fever, the corrected sedimentation index and leukocyte count are of about equal value. In view of the large percentage of error in the technic of the leukocyte count and the necessity for repeated counts, the corrected sedimentation index is more valuable as a single, isolated test. One or both tests may be normal in the presence of clinical signs of rheumatic fever. Corrected sedimentation index determinations are of no significance in the evaluation of active rheumatic fever if performed within two or three weeks after an infection of the upper part of the respiratory tract or tonsillectomy. Neither the leukocyte count nor the corrected sedimentation index is a specific rheumatic fever test but must be interpreted with regard to other considerations. In rheumatic fever subjects, repeatedly elevated leukocyte counts and rapid corrected sedimentation indexes should be considered indicative of subclinical rheumatic fever in the absence of any other cause for their abnormality.

Scurvy in Etiology of Subdural Hematoma.—In studying the incidence of chronic subdural hemorrhage as reported by various authors, Ingalls finds that it occurs primarily in infants, chronic drinkers and the insane. Subclinical scurvy may exist before clinical manifestations and x-ray changes of chronic subdural hemorrhage become apparent. In the group of nine infants studied at the Infants' and the Children's Hospital in Boston one is excluded, as it was an instance of birth hemorrhage. Five of the eight remaining patients were cared for in institutions or by foster mothers, and six were specifically recorded to have had rosaries of varying degrees. Roentgenograms of the long bones were available for study in five of these cases, and x-ray evidence of scurvy was elicited in three. Active scurvy could not be demonstrated readily in each patient, since the essence of the conception is that of a chronic low grade process. One might say that chronic subdural hemorrhage as encountered clinically and at necropsy is an end stage, far removed from the initial series of events. The scorbutic

process itself may have been arrested, without obviating the effects of repeated cerebral hemorrhage. It is not unreasonable to assume that close scrutiny of the dietary of alcoholic addicts and the insane would often reveal deficiency of vitamin C, an observation so much more subject to objective proof in early life. Cevitamic acid levels in the blood and urine studies for the determination of the degree of saturation with the vitamin offer new methods of investigating latent scurvy. The following sequence of events seems to be concerned with the production of idiopathic chronic subdural hematoma: An underlying bleeding diathesis is postulated in most cases on the basis of scurvy. Free subdural bleeding is produced by a definite or insignificant head trauma causing either disruption of arachnoid invaginations into the dural sinuses or rupture of a bridging vein. Organization and removal of the clot are impeded by the scorbutic process, resulting in a neomembrane surrounding free blood. Repeated trauma and remission and exacerbation of the scurvy modify the disease. Late symptomatology is occasioned by enlargement of the semipermeable sac following the slow breakdown of red blood cells and reduction of free hemoglobin into smaller molecular aggregates with the passage of time.

New York State Journal of Medicine, New York

37: 1-118 (Jan. 1) 1937

Infiltration Anesthesia in Vaginal Plastic Operations. H. B. Matthews and V. P. Mazzola, Brooklyn.—p. 1.
Acute Recurrent Polymyositis Associated with Blood Eosinophilia: Report of Case with Review of Literature. S. E. Krohn, Gloversville.—p. 10.
Etiology and Pathogenesis of Multiple Tumors of Urinary Tract: Treatment and Results. E. L. Keyes and R. S. Ferguson, New York.—p. 15.
Proper Dietary as Public Health Measure: Relation to Infancy and Childhood. E. J. Wynkoop, Syracuse.—p. 21.
*Hodgkin's Disease with Bone Manifestations. S. G. Schenck, Brooklyn.—p. 27.
Granulocytopenia: Analysis of Nineteen Cases. J. R. Scott and E. Herbert Jr., New York.—p. 38.
Trichomonas Vaginalis Vaginitis: Laboratory and Clinical Study. R. A. Pattyson, East Orange, N. J.—p. 41.
Treatment of Fractures of Facial Bones. G. H. Cox, Glen Cove.—p. 52.
Specific Therapy in Rhus Dermatitis. H. Sharlit and B. A. Newman, New York.—p. 61.
Rôle of the Pathologist in the Non-Teaching Hospital. T. J. Curphey, Brooklyn.—p. 64.

Hodgkin's Disease with Bone Manifestations.—Schenck points out that although it is well known that Hodgkin's granuloma is manifested by an enlargement of the lymph nodes and by an invasion of the lymphatic system, frequently associated with splenomegaly, it is not generally appreciated that the disease may also reveal itself in the skeletal system. The granulomatous invasion of the osseous structures, with or without visual or palpable lymph node involvement, is not a rare occurrence. The author considers only those patients who present roentgen evidence of bone changes in the clinical course of their disorder. In reviewing the records at the Jewish Hospital for the last ten years, he has collected 107 cases of Hodgkin's granuloma. In the first five years of the series, during which time there were twenty-three confirmed cases of lymphogranulomatosis, only one patient had skeletal involvement. In the last five years, which included fifty-nine proved cases, there were seven with osseous invasion, demonstrable roentgenologically. This discrepancy between the first and second periods is evidently due to the fact that bone lesions have been searched for and recognized more frequently in recent years. In this series of eight cases the vertebrae were involved in six, the pelvis in five, the skull in three, the femur in two, and the sternum, humerus, scapula and ribs in one case each. Larger series by other investigators have shown that the order of frequency of bone involvement is vertebrae, sternum, pelvis, femur, ribs, skull, humerus, scapula and clavicle. Two of the eight patients gave no history of pain over the involved region; in the others, pain, which was of a dull aching or sharp lancinating character, preceded the demonstrable invasion of the bone by a few days or as long as two years, as occurred in one case. With vertebral involvement the pains are often girdling in character and increased on motion. With involvement of the lumbar spine, the pains are frequently referred to the lower extremity. The other symptoms are the same as in Hodgkin's disease without bone changes. Thus bone changes, especially when associated with the chief symptoms of the disease, should lead to the correct diagnosis. The advisability for more frequent and complete roentgen studies of the bones in Hodgkin's granuloma is obvious.

Rhode Island Medical Journal, Providence

19: 187-200 (Dec.) 1936

Early Treatment of the Insane in Rhode Island. A. H. Harrington, Providence.—p. 187.
Bedside Manner and Psychiatry. H. W. Williams, Howard.—p. 189.
The Schilling Hemogram in Appendicitis. H. E. Gauthier, Woonsocket.—p. 192.

South Carolina Medical Assn. Journal, Greenville

32: 279-304 (Dec.) 1936

Pulmonary Actinomycosis. H. Y. Harper, Anderson.—p. 279.
Surface Anesthesia of Traumatized Urethra. E. L. Brodie, Buffalo, and I. A. Phifer, Spartanburg.—p. 282.
Toxic Nodular Goiters. R. G. Doughty, Columbia.—p. 284.

Virginia Medical Monthly, Richmond

63: 589-652 (Jan.) 1937

Lesions of Right Upper Abdominal Quadrant, Area of Romance. W. D. Haggard, Nashville, Tenn.—p. 589.
Surgery of Thyroid Gland. J. M. Emmett and A. E. Long, Clifton Forge.—p. 595.
Bronchoscopic Observation of Laryngotracheobronchitis in Children with Obstructive Dyspnea. E. T. Gatewood, Richmond.—p. 600.
Differential Diagnosis of Chronic Basal Pulmonary Lesions. P. P. Vinson, Richmond.—p. 603.
Some Points of Interest in Treatment of Fractures of Long Bones by Use of an Improved Fracture Reducing Frame. C. W. Putney, Staunton.—p. 606.
*Multiple Myeloma: Report of Five Cases. H. Walker and N. Bloom, Richmond.—p. 616.
Control of Syphilis in States of Tennessee River Valley. R. A. Vonderlehr, Washington, D. C.—p. 621.
Dystrophia Dystocia Syndrome. W. McMann, Danville.—p. 625.
Fever Therapy in Treatment of Certain Inflammatory Eye Diseases. G. H. Faget, Norfolk.—p. 628.
Pregnancy and Labor in 400 Unmarried Primiparas. W. Bickers, Richmond.—p. 632.
Some Further Observations of Sulfur Metabolism as Factor in Arthritis—Introduction of Suggestion that Adrenal Function Affects Sulfur Metabolism. T. Wheeldon, Richmond.—p. 634.
Stomatitis Due to Sensitivity to Dental Plates: Case. W. L. Weaver, Richmond.—p. 636.

Multiple Myeloma.—Walker and Bloom present five cases of multiple myeloma and stress the protean manifestations of the disease. Clinically, myeloma cases present a varied picture. They are often diagnosed as neuritis, lumbago, arthritis, anemia, chronic nephritis and spinal cord tumors. Yet, when the widespread pathologic changes and the rarity of the disease are considered, these errors in diagnosis are explained and are to be expected. In almost all cases, pain is a prominent feature. The pain may be intermittent, severe, wandering or recurrent. Pathologic fractures are frequent and thoracic deformity is common. Chronic bronchitis and emphysema are often present. Owing to the fact that the tumor most frequently attacks the vertebrae, ribs and skull, neurologic symptoms and signs are common. The mental faculties remain clear, although as a terminal event mental confusion and coma do occur. The renal changes are variable. Clinically, the patient may present a picture of chronic nephritis with urinary changes in keeping with this diagnosis. There are no gastrointestinal symptoms that are peculiar to this disease, nausea, vomiting and colicky pains being the most common complaints. Therefore it is obvious that there is no symptom complex that is characteristic of myeloma. Only by the presence of some unusual physical phenomenon is the correct diagnosis suspected, this usually being confirmed by roentgenography and pathologic studies. Since multiple myeloma is primarily a bone marrow tumor, one would expect many changes in the blood. All osteolytic bone lesions have to be excluded. Metastatic carcinoma and metastatic hypernephroma particularly have to be ruled out. Chloroma and bone cysts are sometimes confusing. There are no physical or laboratory observations that can be absolutely depended on to make a differential diagnosis, and for absolute proof of the existence of this disease a biopsy is necessary. The prognosis is unfavorable. Roentgen therapy brings about remissions, although these may occur spontaneously; but no proved case has ever been reported as cured. The average duration of life is about three years.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

48: 593-682 (Dec.) 1936

Allergy. W. N. Goldsmith.—p. 593.
Id. G. B. Dowling.—p. 601.
Ehlers-Danlos Syndrome. F. P. Weber.—p. 609.
Generalized Pustular Psoriasis: Case. A. C. Roxburgh and K. O. Black.—p. 618.
Molluscum Sebaceum. H. MacCormac and R. W. Scarff.—p. 624.

British Medical Journal, London

2: 1125-1178 (Dec. 5) 1936

Concerning Injuries of Spinal Cord. G. Jefferson.—p. 1125.
*Pulmonary Tuberculosis in Young Adults: Significance of Contact History. W. E. Lloyd and A. Margaret C. Macpherson.—p. 1130.
Recent Observations on Biochemistry of Lens. Dorothy R. Campbell.—p. 1133.
Intestinal Strangulation from Clinical Standpoint. K. P. Brown.—p. 1137.
Serum Treatment of Typhoid Fever. R. C. Robertson and H. Yu.—p. 1138.
Dysphagia with Anemia in a Male. E. Watson-Williams.—p. 1140.

Tuberculosis in Young Adults.—Lloyd and Macpherson stress the fact that about four out of every five young adults suffering from pulmonary tuberculosis who have been in contact with a known case of infection develop the disease within five years of exposure to the last known contact. This demonstrates the value of continuing the observation of contacts for at least five years after they were known to be last exposed. There is a history of household infection in 82 per cent of the contact cases. History of exposure to tuberculous fathers is almost twice as frequent as history of exposure to tuberculous mothers. In about half of the contact cases spread of infection is not obviously due to transmission of the disease from parent to offspring, but in many cases infection is apparently introduced into the household by a brother or sister. About 60 per cent of the young adults who develop pulmonary tuberculosis are unaware of any contact with the infection. In noncontact cases the toxemic type of onset is more common than the nontoxemic (70 versus 28 per cent). If all classes of contact cases are taken together, the toxemic and nontoxemic types of onset occur in about equal proportions. It appears however that, if there is an interval of more than five years between the last known exposure to infection and the onset of the disease, the onset is more likely to be of the nontoxemic type.

Journal of State Medicine, London

44: 621-682 (Nov.) 1936

Juvenile Rheumatism. F. J. Poynton.—p. 621.
Etiologic Relationship of Streptococcus Haemolyticus to Rheumatic Diseases. W. Goldie and G. J. Griffiths.—p. 670.

Journal of Tropical Medicine and Hygiene, London

39: 269-284 (Dec. 1) 1936

Report on Effects of Certain Poisons Contained in Food Plants of West Africa on the Health of Native Races. A. Clark.—p. 269.
Diseases of the Skin in Negroes. L. J. A. Loewenthal.—p. 276.

Lancet, London

2: 1313-1376 (Dec. 5) 1936

*Renal Tuberculosis: Early Diagnosis and Treatment. H. Lett.—p. 1313.
Treatment with Prontosil of Puerperal Infections Due to Hemolytic Streptococci. L. Colebrook and M. Kenny.—p. 1319.
Mode of Action of p-Aminobenzenesulfonamide and Prontosil in Hemolytic Streptococcic Infections. L. Colebrook, G. A. H. Buttle and R. A. Q. O'Meara.—p. 1323.
Pain as the Only Sign of Pancreatic Carcinoma. G. Bourne.—p. 1326.
Enlarged Prostate Associated with Mammary Carcinoma: Case. H. Burrows.—p. 1328.

Renal Tuberculosis.—Lett believes that better results can and will be obtained in renal tuberculosis if certain fundamental facts are widely appreciated and acted on: 1. The onset of renal tuberculosis is insidious and may be symptomless. Repeated examinations should therefore be made of the urine of every patient undergoing treatment for extra-urinary tuberculosis. If such examinations were carried out as a routine, many more cases of tuberculosis of the kidney would be recognized in their early stages. 2. Some cases of very early renal tuberculosis can be cured by medical treatment, provided they are recognized before there is any alteration in the outline of the pelvis or calices. 3. Unilateral renal tuberculosis becomes surgical as soon as pyelograms show the changes characteristic of the disease, for it is then beyond the hope of cure by medical means alone. 4. The patient may be free from disturbing symptoms for prolonged periods, but the disease will almost invariably progress and ultimately prove fatal unless the kidney is removed. 5. Sanatorium treatment should always follow nephrectomy and in some cases precede it, for renal tuberculosis is not a primary disease; it is always secondary to a systemic infection and indicates a lowered resistance to the tubercle bacillus. Close cooperation of the general practitioner, the physician and the surgeon is more desirable and indeed essential in renal tuberculosis than in any other disease.

Medical Journal of Australia, Sydney

2: 661-698 (Nov. 14) 1936

*Pyelitis and Pyelonephritis: Acidification and Mandelate Therapy. R. J. Silverton.—p. 661.
Pulmonary Tuberculosis: Surgeon's Inquiry. J. C. Storey.—p. 670.

2: 699-736 (Nov. 21) 1936

The Settlement of Tropical Australia. D. H. K. Lee.—p. 707.

2: 737-770 (Nov. 28) 1936

The Life and Works of Sir Charles Bell. L. Cowlishaw.—p. 737.
Outpatient Treatment of Gonorrhea in Women. Beatrice Warner.—p. 747.
Gonorrhea in the Inpatient Adult Female. K. J. G. Wilson.—p. 750.
Short Investigation of Effect of "Ensol" on Transplantable Mouse Tumor. W. Moppett and N. E. Goldsworthy.—p. 754.

Pyelitis and Pyelonephritis.—Silverton treated thirty-seven patients with various infections of the urinary tract by acidification or mandelates. Only vesical or posterior urethral infections were present in about one third of the patients. At the beginning of this work acidification alone, with strong nitrohydrochloric acid, was the method employed. The results were satisfactory in the majority of cases, but thorough eradication of the infection was made possible in some only by the addition of sodium mandelate or by the administration of ammonium mandelate instead. Seventeen patients were treated with strong nitrohydrochloric acid alone, success being complete in thirteen and partial in four; in three of the latter an organic lesion was present, while in the fourth the acidification caused severe irritation of the bladder. Nine patients were treated with ammonium mandelate alone, with success in seven and partial success in two. No organic lesions were present in this group of patients. Six patients were treated with strong nitrohydrochloric acid followed or accompanied by sodium mandelate, with partial success and success in two each. Only in the two successful cases were organic lesions absent. Five patients, to whom previous treatment with strong nitrohydrochloric acid had been given, were treated with ammonium mandelate. Treatment failed in one, was partially successful in two and was successful in two. It is concluded that hyperacidification of the urine is a powerful bacteriostatic or even bactericidal method. The addition of salts of mandelic acid reinforces this action. A combination of the two effects may be achieved in most cases by the use of ammonium mandelate, which both acidifies the urine and allows the excretion of mandelic acid.

Journal of Oriental Med., Dairen, South Manchuria

28: 79-90 (Nov.) 1936

Influence of Cod Liver Oil on Experimental Tuberculosis of the Guinea-Pig. Y. Tsuge.—p. 79.
Study of Function of Thyroid Glands of Tuberculous Rabbits. T. Hashimoto.—p. 81.
Influence of Cold on Reduced Glutathione Content in the Blood. M. Hashimoto.—p. 82.
Vascular Measles in Cervical Region Among Infants. K. Okada.—p. 83.
Syncytioma Malignum Attended by Metastasis on Vaginal Wall. T. Takaichi.—p. 84.
Metagonimiasis Yokogawai in Dairen. S. Fukuda and K. Morikawa.—p. 85.
Influence of Various Incretory Glands on Formation of Rhodan in Organism: II. Influence of Insulin and Dextrose. M. Hashimoto.—p. 86.
Id.: III. Influence of Testicles. M. Hashimoto.—p. 87.
Id.: IV. Influence of the Ovary. M. Hashimoto.—p. 88.
Id.: V. Influence of the Hypophysis. M. Hashimoto.—p. 89.
Id.: VI. Influence of Epinephrine and Sulfur. M. Hashimoto.—p. 90.

Presse Médicale, Paris

44: 2009-2032 (Dec. 12) 1936

*Fifteen Minute Phenolsulfonphthalein Test. Pasteur Vallery-Radot, P. Delafontaine, R. Israel and J. Porge.—p. 2009.
Thoracic Breath Sounds. P. Braun and R. Pigeon.—p. 2010.
Precise Aortometry. S. Kreuzfuchs.—p. 2013.

Fifteen Minute Phenolsulfonphthalein Test.—Vallery-Radot and his co-workers studied the possibility of substituting a shorter period than the classic one in the use of the phenolsulfonphthalein test. Their investigations were made on eighty-one subjects, of whom six were completely normal and seventy-five had various diseases, particularly hypertension, Bright's disease and old nephritis. The phenolsulfonphthalein test was performed according to the classic method, a period of one hour and one of fifteen minutes being used. The technic was approximately the usual one, with intravenous injection of 1 cc. of a solution containing exactly 6 mg. of phenolsulfonphthalein. As far as possible, the urines were collected by spontaneous micturition a quarter hour, a half hour, one hour and two hours after the injection. In the six normal subjects they found that the test gave a volume excretion of more than 25 per cent of the dye at the end of a quarter hour and of more than 65 per cent at the end of an hour. The other patients were divided into three groups. In thirty-one there was an elimination greater than 25 per cent in the first quarter hour. In the majority of these the functional integrity of the kidneys was confirmed by other tests. In thirty-six subjects the elimination was only 15 per cent or less in the first quarter hour. This result was paralleled by the excretion in one and two hours. Finally, eight of the patients had an excretion of between 17.5 and 22.5 per cent in the first quarter hour. These results led to the conclusion that an elimination of phenolsulfonphthalein equal to or higher than 25 per cent in a quarter of an hour indicates that elimination in one hour or longer will surely be normal. An elimination of less than 15 per cent in a quarter of an hour indicates similarly a defective elimination over a longer period. No conclusions can be drawn from elimination in the neighborhood of 20 per cent in the first quarter hour. Therefore the authors believe that it is sufficient to shorten the test to a quarter of an hour, which, since it is equally accurate, is more rapid and more sensible than the more prolonged periods.

44: 2033-2056 (Dec. 16) 1936

Study of Certain Chemical Components of Blood of Asthmatic Patients. F. Bezançon, A. Jacquelin, F. Joly and C.-O. Guillaumin.—p. 2033.
*Hypo-Amphotonic Method with Atropine. D. Daniélopolu and N. Radulesco.—p. 2035.
Clinical Study of Use of Drugs with Purine Base. J. Schunck de Goldfiem.—p. 2038.

Hypo-Amphotonic Method with Atropine.—Little attention has been paid to the so-called hypo-amphotonic action of atropine, when given in long-continued doses, on both the sympathetic and parasympathetic nervous systems. According to Daniélopolu and Radulesco, this action is entirely different from the common clinical treatment of disease with atropine. The method used by these authors is based on the paralyzing action of atropine on both systems when given for prolonged periods. They have proved that small doses of atropine excite the sympathetic and parasympathetic, but predominantly the latter. Average doses currently employed in therapeutics and administered at one time exert a paralyzing action on the parasympathetic exclusively. Large and toxic doses have both a direct action on the tissues and a vegetative effect. It is, however, with the use of small doses over long periods that the authors are particularly concerned. Classic treatment is employed in unaccustomed subjects, while their method is based on habituation to atropine. Classic treatment results in three phases: excitation, paralysis of the parasympathetic and excitation. Furthermore, the classic treatment is aimed at recovery, while their method is preventive. Usually they began treatment by giving a daily dose of 1 mg. of atropine sulfate administered in three doses. This is increased by 0.5 mg. daily until 3 or 4 mg. is given daily, always in three doses. The top dose is continued as long as necessary. Intolerance is judged by the heart rate, which, when the drug is properly given, is not accelerated by the treatment. Except in rare cases, it is admirably supported. This treatment is indicated in so-called vagotonia, seasickness, asthma, ulcer of the stomach, biliary colic, tabetic gastric crises, toxic goiter, angina pectoris, muscular hypertonia, severe vomiting of pregnancy and preanesthetic preparation of patients. The wide range of usefulness is due to the double action of atropine when given in this manner, and it deserves a place in the treatment of a considerable number of disorders.

Progrès Médical, Paris

Nov. 28, 1936 (No. 48) Pp. 1841-1880

Part of Prehypophysis in Certain Obesities and Emaciations. P. Merklen, M. Aron, L. Israel and A. Jacob.—p. 1849.
Liver and Cevitamic Acid. M. Loeper, J. Cottet and A. Lesure.—p. 1851.
*Courtois Sign of Localization in Course of Coma Due to Circumscribed Cerebral Lesion. P. Sivadon.—p. 1855.

Courtois Sign in Coma Due to Cerebral Lesion.—Sivadon calls attention to the sign described by the late Adolphe Courtois for helping in the localization of circumscribed cerebral lesions in the presence of coma. It consists in the following: The comatose patient is placed on his back; flexion of the head on the chest produces in only one region an automatic flexion of the leg on the thigh and the thigh on the abdomen; this movement is strictly unilateral, and on the side on which the anatomic examination revealed a localized lesion of the cerebral centers which had produced the comatose state. The two cases on which this sign is based are redescribed by Sivadon. In one of them necropsy confirmed the localization indicated by the sign.

Revue Franç. de Gynéc. et d'Obst., Paris

31: 913-976 (Nov.) 1936

Value of Ovarian Grafts in Women. G. Cotte.—p. 913.
*Complications of Radium Therapy in Gynecology. Reiles and Fobe.—p. 921.
Diagnostic Value of Henry's Reaction in Obstetrics and Gynecology. Marie Reniger-Areschian.—p. 934.

Complications of Radium Therapy in Gynecology.—The use of radium in gynecology can cause complications through its direct action or through the inflammatory process caused or revived by the radium. Reiles and Fobe state that the most common direct actions are the development of uterine perforations, vesical fistulas, proctitis, cystitis and vaginal atresia. In Strasbourg, radium is used chiefly for three general conditions; namely, climacteric metrorrhagia, cancer of the cervix and cancer of the uterine body. It is important that in using this treatment the duration of application be carefully controlled and that the cervix be as free from infection as possible. The authors recommend as helpful in the majority of patients the injection of antiseptics a few days before the application of radium; sometimes vaccination and electrocoagulation would do much to decrease the risk from infection. The most important complication, however, is fatal pulmonary embolism, which they observed in 1 per cent of their cases of metrorrhagia, 1 per cent of those with cancer of the cervix and 28.5 per cent of those with cancer of the uterine body. The inflammatory complications can be decreased in frequency by the supplementary precautions outlined.

Strasbourg Médical

96: 461-478 (Oct. 15) 1936

Neuropsychiatric Complications and Sequels in Infantile Pneumonia. M. Schachter.—p. 461.
Tuberculous Meningitis Following Bronchography: Case. R. Turon.—p. 463.
*Use of Barium Sulfate with Colloidal Properties in Gastric Hyperacidity and Colitis. J. Finkelstein.—p. 465.

Barium Sulfate in Gastric Hyperacidity.—Finkelstein reports twenty-six cases of gastric hyperacidity and phenomena indicative of spastic colitis, which were treated by means of inert colloidal barium sulfate. In all these cases, which were characterized by spastic states of the digestive tube, the results were favorable. The therapeutic activity of the product is shown to be effective and lasting. It is more effective, however, in the presence of normal or increased gastric acidity than when the acidity is low or absent. The dosage varied from a teaspoonful to a soupspoonful before meals.

Clinica Pediatrica, Modena

28: 671-750 (Nov.) 1936

Erythroblastic Anemia of Cooley's Type; Splenectomy: Case. R. Simonetti Cuzza.—p. 671.
*Changes of Gastric Chemistry in Children Suffering from Erythremic and Erythroleukemic Myelosis. A. Racugno.—p. 691.
Pancreas Diseases in Children. B. Benassi.—p. 728.

Changes of Gastric Chemistry in Anemic Children.—Racugno studied the behavior of the gastric chemistry in children suffering from infantile erythroleukemic myelosis and erythroblastic anemia of Cooley's type with osteoporosis. Hypo-achylia or complete achylia is a constant occurrence in all children suffering from erythroleukemic myelosis. It does not mean, however, that there is any relation between pernicious anemia in adults and anemia of erythroleukemic myelosis. Megaloblasts or megalocytes are rarely or never present in the blood and the bone marrow of erythroleukemic children. Administration of liver and gastric extracts as well as of meat digested by normal gastric juice fails to give satisfactory results in erythroleukemic myelosis. Necropsies on children who have died from the disease fail to show atrophy of the gastric mucosa. According to the author, gastric achylia in erythroleukemia myelosis is secondary to hematopoietic alterations induced by the disease. In anemia of Cooley's type the changes of the gastric chemistry are less grave and less important than those induced by erythroleukemic anemia. Because of the different behavior of the gastric chemistry in the two types of anemia and of the familial and racial conditions that are necessary for the development of anemia of Cooley's type, the author advises taking Cooley's anemia out of the group of erythroleukemic myeloses of children. The changes of the gastric chemistry in several diseases of children complicated by secondary anemia are also induced by anemia.

Giornale di Clinica Medica, Parma

17: 1487-1574 (Dec. 30) 1936

Action of Total Thyroid Extracts on Cardiovascular Apparatus. A. Garaventa.—p. 1487.
Hypertrophy of Parotids in Diabetes: Cases. G. Ferretti.—p. 1495.
*Behavior of Arneth's Formula in Experimental Chronic Lead Poisoning. G. Guareschi.—p. 1501.
Treatment of Recurrent Quinine Resistant Malaria. M. Francesco. —p. 1518.
Inversion of Cecum. T. Bigliardi.—p. 1527.

Arneth's Formula in Chronic Lead Poisoning.—Guareschi studied the behavior of Arneth's formula in the blood of rabbits slowly poisoned by injections of an aqueous solution of neutral lead acetate. The most constant and obvious change in the blood picture was the shift to the left of Arneth's formula, followed late in the experiment by slight hypochromic anemia, leukocytosis and changes of the leukocyte formula. The forms of granulocytes that appeared in the blood of the animals early in the experiment were neutrophil myelocytes and metamyelocytes, which normally are found only in the bone marrow and which appear in the blood only in the presence of toxic or pathologic conditions by which the functions of the bone marrow are altered. Myelocytes, reticulo-endothelial cells and degenerated polynucleated neutrophils caused the shift of Arneth's formula to the left. The latter is not a specific manifestation of chronic lead poisoning. It is caused by a reaction of the organism to toxic pathologic stimulation of the hematopoietic myeloid and reticulo-endothelial systems. It can be induced by stimulation of the systems by toxic substances other than lead as well as by pathologic conditions. According to the author the shift of Arneth's formula to the left, in association with the presence of myelocytes in the blood, is of value in the early diagnosis of chronic lead poisoning.

Pathologica, Genoa

28: 537-581 (Dec. 15) 1936

Cysts of Fat Capsule of Kidney: Case. I. Rizzi.—p. 537.
*Comparison of Meinicke Second Clarification Reaction and Schlessmann's Modification in Serodiagnosis of Gonorrhea. A. Ambrogio. p. 544.
Influence of Uric Acid on Diffusibility of Colloidal Dyes in the Skin. A. Mussafia.—p. 553.
Luteinizing Factor of Anterior Pituitary-like Principle and Menstruation. F. P. Doneddu.—p. 561.

Comparison of Meinicke Reaction and Schlessmann's Modification in Gonorrhea.—Ambrogio made a comparative study of the diagnostic value of Meinicke's second clarification reaction and Schlessmann's modification in gonorrhea. Both tests are of simple technic. The author found that Meinicke's second clarification reaction is of less value than the bacterioscopic and clinical examinations in the simple acute forms of male gonorrhea and of greater value in the chronic forms without complications. A fairly good proportion of positive results (68 per cent) is obtained in genital and extragenital complicated cases. Nevertheless, negative results are obtained in cases of gonorrhea proved by local and general reactions. The Meinicke reaction gives a low proportion of positive results in female gonorrhea located at the cervical canal (64 per cent) and a high proportion in urethral gonorrhea and in gonorrheal bartholinitis (90 and 75 per cent, respectively). Meinicke's reaction cannot be used for the diagnosis of gonorrhea in cases of syphilis when the syphilitic reaction is partially positive, because of the fact that its behavior is analogous to that of the syphilitic test. The control tests carried out by the author on serums from a group of nonsyphilitic persons, including normal persons and patients who had no venereal or gonorrheal genital diseases, showed that Meinicke's reaction gives a great percentage of nonspecific results, which may be made positive after the patients receive injections of specific vaccine or of nonspecific proteins. Schlessmann's modification of Meinicke's reaction generally gives results similar to those given by the original test. In some cases, however, the results of the tests do not coincide. Schlessmann's test is less sensitive but much more specific than the original test. Both technics are more sensitive than the complement fixation test but are not as specific as the latter. This fact and the lack of constant results of the original and modified Meinicke tests in different clinical types of gonorrhea rob these technics of their value in the serodiagnosis of gonorrhea.

Riforma Medica, Naples

53: 1577-1612 (Nov. 21) 1936

Action of Lipids by Intravenous Route on Biliary-Duodenal Secretion. A. Tarsitano.—p. 1579.
*Diminution of Toxicity of Arsphenamine by Addition of Extracts of Skin. M. De Luca.—p. 1582.
Crusade Against Acute Peritonitis. A. Pellegrini.—p. 1585.
Radium Therapy of Malignant Tumors of Respiratory Tract. C. Torrigiani and V. Palumbo.—p. 1607.

Diminution of Toxicity of Arsphenamine.—De Luca made experiments on rabbits with intravenous injections of arsphenamine with and without skin extract. He concludes that the addition of skin extract to arsphenamine renders the latter less toxic to the rabbit. The detoxifying action is the same as that of liver and brain extracts. According to the author, the action of the skin extract is due to a condensation process between the molecule of arsphenamine and that of the amino acids present in the skin. The combination of the arsphenamine and amino acid molecules results in the formation of a molecular complex which has a less harmful effect on the tissues than that of the arsphenamine molecule alone. In the chemicophysical process amino acids are of importance, regardless of the organ from which they are obtained. There are slight differences in the neutralizing power of the extracts from different organs, probably because of the amount and quality of amino acids present in the given organ from which the extract is made.

Prensa Médica Argentina, Buenos Aires

24: 1-68 (Jan. 6) 1937. Partial Index

Gastrocolic Fistula in Gastric Cancer: Case. M. R. Castex, J. Garcia del Rio and E. S. Mazzei.—p. 1.
Surgery in Bronchiectasia. E. Finochietto and O. A. Vaccarezza.—p. 14.
Simultaneous Pregnancy in Double Uterus: Case. A. Peralta Ramos and F. A. Uranga Imaz.—p. 25.
Curves of Venous and Capillary Glycemia in Disturbances of Glycid Metabolism. T. Castellano and M. Grinstein.—p. 31.
*Treatment of Hemoptysis by Venom of Vipera Rusellii. A. A. Raimondi and A. Sangiovanni.—p. 42.
Scleroderma and Sclerodermic Syndromes: Cases. J. J. Spangenberg, F. Guagnini, F. Buono and H. Gattini.—p. 46.

Treatment of Hemoptysis by Poison of Vipera Rusellii.—Raimondi and Sangiovanni state that the poison of the Rusellii snake has coagulating properties, which are shown immediately after an intradermic injection of the poison and which are more obvious after two hours. The coagulation

time becomes normal four hours after the injection. The intensity of coagulation depends on the amount of venom injected. The poison of the Rusellii snake can be used as an emergency treatment in cases of grave hemorrhages or hemoptysis and may be repeated every four hours until the hemorrhage is controlled. There is no danger for the patient provided the dose does not exceed 0.05 mg. In simple forms of repeated hemoptysis or in cases of persistence of a bloody sputum the poison, in association with other coagulating substances, gives satisfactory results. In the authors' cases the patients were suffering from tuberculous hemoptysis or from purpura haemorrhagica. The treatment consisted in a daily intradermic injection of 0.05 mg. of the poison dissolved in 1 cc. of a 1 per thousand tricresol solution made in sodium chloride solution, followed four hours later by an injection of 10 cc. of any of the following substances: tenth normal calcium chloride, calcium gluconate or coagulen. The authors do not give the route they use for injecting the coagulating substances. For verification of results, further work on the subject is necessary.

Deutsche Zeitschrift für Chirurgie, Berlin

248: 1-146 (Dec. 9) 1936. Partial Index

*Sarcoma of Knee Resulting from Roentgen Irradiation. F. Becker.—p. 11.
Operation for Sterilization in Man. P. Moysich.—p. 24.
Difficulties Attending Intravenous Drip Infusion. H. Lamm.—p. 32.
Unusual Forms of Dislocation of Foot. G. Röttger.—p. 43.
Hemangiomatosis of the Intestine. H. Hanke.—p. 52.
*Corneal Lesions After Removal of Gasserian Ganglion for Trigeminal Neuralgia. Charlotte Drutter.—p. 55.
*Diagnosis of Carcinoma by Determination of Blood Serum Lipase and Carcinoma Reaction of Fuchs. F. Bernhard and K. Köhler.—p. 72.

Sarcoma of Knee Following Roentgen Irradiation.—According to Becker, there were fifteen instances of sarcoma developing in a tuberculous knee treated by roentgen irradiation. All the patients received intensive irradiation over a long period. The diagnosis of joint tuberculosis was made in most cases on the basis of clinical study. There was a histologic diagnosis in two, and in two cases there was probably no tuberculosis. Sarcoma developed from five to seven years after irradiation. On histologic examination it proved to be, as a rule, a polymorphous cell tumor of pronounced malignity. The author reports the result of an uncontrolled irradiation in a personal case ending in severe injury to all the tissues of the joint. The author believes that the tuberculous process in all probability plays a subordinate part in the development of the sarcoma. The important factor is the roentgen irradiation. The epiphyses appear to be sensitive to roentgen exposure. He therefore suggests that great care be exercised in application of roentgen therapy for joint tuberculosis, particularly in the young.

Corneal Lesions Following Removal of Gasserian Ganglion.—Drutter reports that, of sixty-nine patients treated by alcohol injection of the gasserian ganglion for the cure of trigeminal neuritis, seventeen (24.6 per cent) developed keratitis. In nine (52.9 per cent) the lesion remained permanent. Eighteen patients were subjected to twenty-seven operations for the removal of the gasserian ganglion. The cornea remained normal in all cases. The author concludes that neuroparalytic keratitis develops only as a result of anesthesia of the cornea. The cause of keratitis remains unexplained in spite of many studies. Primary trigeminal neuralgia seldom involves the first branch of the nerve. Pains proceeding in this area are considered secondary by many authors. The incidence of corneal anesthesia and consequent disease of the cornea cannot be diminished through the use of the alcohol injection method of the gasserian ganglion developed in Germany. The subtotal posterior ganglion section of the root of the trigeminus, according to the method of Frazier-Spiller, does not lead to the loss of sensitiveness of the cornea and to neuroparalytic keratitis. The persistence of high mortality in Germany following the operative intervention is due to the lack of experience. The treatment with alcohol injection makes the operative intervention even more difficult. The operative subtotal section has a smaller percentage of recurrences than the alcohol injection method. According to American authors, the subtotal posterior ganglion resection is the method of choice in the treatment of trigeminal neuralgia. The author suggests that the injection method should be reserved for patients whose general condition will not justify a major procedure. Younger patients should be treated as far as possible by operative intervention so as to avoid the possibility of keratitis.

Diagnosis of Carcinoma from Blood Serum.—Bernhard and Köhler state that there is in carcinoma an increase of atoxyl-resistant lipase in the blood serum. The blood lipase content diminishes after operative removal of carcinoma and returns to normal after some time. There is a diminution of the atoxyl-resistant as well as of the general lipase content in all generalized lesions. The authors found an increase of the atoxyl-resistant lipase in 219 out of 313 instances of cancer. In sixty-two there was a diminution and in thirty-two a normal amount. Lipase determination is of considerable diagnostic value in carcinoma of the skin, the breast and the rectum. Its value is rather limited in carcinoma of the biliary passages and the pancreas. The atoxyl-resistant lipase is, as a rule, increased in carcinoma of the prostate, the bladder, the esophagus and the bronchi. This observation, however, is present in about 10 per cent of persons free from carcinoma. The atoxyl-resistant lipase undergoes the same alterations as in carcinoma in conditions that frequently lead to malignant degeneration, such as chronic cystic mastitis, bleeding breast, gastric ulcer, gastritis, strawberry gallbladder, goiter and chronic infections. The basis for the Fuchs reaction for the diagnosis of carcinoma lies in the observation that the serum of a normal person will not break down normal fibrin. Fibrin derived from the blood of a carcinoma patient will not be acted on by the serum of a carcinoma patient but will be broken down by normal serum. Likewise the serum of a normal person will not affect the fibrin derived from normal blood, whereas it will affect fibrin derived from the blood of a carcinoma patient. The development of a malignant tumor leads to alterations in the blood, which enable the serum of the carcinoma patient to break down normal fibrin. In the authors' experience there were 92.6 per cent of correct diagnoses in a group of 129 definitely established clinical cases of carcinoma. In a group of 164 patients not exhibiting signs of carcinoma, the percentage of negative tests was 89.2. In a group of twenty-seven patients suspected of a malignant condition, the reaction was positive in twenty-three. The accuracy of the Fuchs reaction appears to be the same for various localizations of cancer. The authors consider this reaction reliable. The application of the two methods mitigated the inaccuracies of each. The accuracy of the diagnosis of carcinoma is made more certain when both methods give a positive result. The authors have frequently found carcinoma in the forebears of healthy persons in whom both methods proved positive and in whom carcinoma and blastophil diseases were ruled out. However, the simultaneous use of the two methods does not establish the diagnosis of carcinoma with absolute certainty.

Medizinische Klinik, Berlin

32: 1725-1760 (Dec. 18) 1936. Partial Index

Manifestation of Werlhof's Purpura on Skin and Mucous Membranes. H. Gottron.—p. 1725.
*Differentiation of Term "Influenza" in Disorders of Upper Respiratory Tract Caused by Colds. H. von Hoesslin.—p. 1727.
*Malariotherapy After Acute Paralytic Stage in Epidemic Poliomyelitis. O. Kauders.—p. 1729.
Ray Treatment of Cancers of Stomach and of Large Glands Secreting into Duodenum. Hayer.—p. 1733.
Dietetics in Urinary Calculi. W. Pollak.—p. 1736.

Diagnosis of Influenza.—Von Hoesslin points out that it is often difficult to differentiate between influenza and disorders due to colds. During an influenza epidemic there is a tendency to designate all rather severe catarrhs of the upper respiratory tract as of an influenzal nature, whereas at times when this is not the case they are designated as respiratory catarrh. However, it is incorrect to identify the two. The reason that they are so frequently identified is the great or complete conformity in the symptomatology, at least during the first days and often throughout the entire course. Psychologic factors likewise play a part, when the term influenza is applied to respiratory disorders that are caused by colds. On the part of the physician, for instance, it may be done in order to impress the patient with the necessity of following instructions and also to avoid reproach in the event of the development of complications. The author discusses the devel-

opment of colds and of influenza, pointing out that in the case of colds the weather conditions play a more important part than in the case of influenza. Then he analyzes the rôle of constitutional factors in the pathogenesis of colds and again shows that their importance is not so great in influenza. On the contrary, strong and otherwise healthy persons frequently develop severe forms of influenza, whereas patients with tuberculosis, for instance, seem to have a considerable amount of immunity against it. As symptoms that are especially important for the differentiation of influenza the author mentions severe prostration at the onset, apathy, severe headaches, pains in the joints and, especially, circulatory disturbances in the form of an accelerated small pulse and slight cyanosis of the lips and of the finger nails. After mentioning the complications and sequels of influenza, he points out that the bacteriologic differentiation presents considerable difficulties, particularly for the practitioner. Nevertheless he thinks that colds and influenza should be differentiated as much as possible.

32: 1761-1780 (Dec. 24) 1936. Partial Index

Diagnosis and Treatment of Tuberculosis of Middle Ear. F. Zöllner.—p. 1761.
*Feeling of Oppression and Dyspnea in Patients with Insufficiency of Left Side of Heart. G. Budelmann.—p. 1763.
*Malariotherapy After Acute Paralytic Stage in Epidemic Poliomyelitis. O. Kauders.—p. 1766.
*Erythrocyte Sedimentation Speed in Malignant Tumors. H. Reichel.—p. 1769.
Question of Reliability of Visscher-Bowman Pregnancy Reaction. W. Ritter.—p. 1771.

Feeling of Oppression in Cardiac Insufficiency.—Budelmann directs attention to a causal factor of the feeling of oppression in patients with myocardial insufficiency which, although known, is given little attention in daily practice. He shows that, in cases in which an insufficiency of the left side of the heart exists, pulmonary stasis is usually the eliciting factor of the feeling of oppression and of dyspnea. The mechanical modification of the respiration that results from the "pulmonary rigidity" plays an important part, but this factor is frequently disregarded in the treatment; the author discusses these conditions. He demonstrates that the determination of the vital capacity of the lung indicates the degree of pulmonary stasis. The "pulmonary rigidity" resulting from a reduction in the elasticity of the lung makes the respiratory mechanism more difficult and causes an increase in the intrapleural pressure. There is a close connection between pulmonary stasis and increase in intrapleural pressure, on the one hand, and the feeling of oppression and dyspnea, on the other. In the treatment it is important to improve the functional capacity of the heart and to prevent the overburdening of the heart in the form of an increased backflow. In an acute attack of cardiac oppression and dyspnea, it is moreover necessary to reduce the pulmonary stasis and with it the increasing intrapleural pressure. Pulmonary stasis is most effectively counteracted by venesection, provided a sufficiently large quantity of blood (from 700 to 1,000 cc.) is withdrawn. A pleural exudate should be carefully drained. In order to improve the functional capacity of the heart, strophanthin or digitalis should be given. In most cases the author found ineffective many of the medicaments that are ordinarily prescribed for cardiac oppression and dyspnea, such as camphor, caffeine, amyl nitrite, glyceryl trinitrate and oxygen. Regarding the prophylaxis, he says that all measures which prevent an overburdening of the water exchange have preventive value.

Malariotherapy in Epidemic Poliomyelitis.—In an epidemic of poliomyelitis, Kauders observed an unusually large percentage of adult patients and points out that in these cases the prognosis is usually less favorable than in children and young persons. In the surviving patients with paralysis, monoplegias were rare, the majority having extensive forms of paralysis. Most frequent was the complete paralysis of the lower extremities, frequently with involvement of the abdominal and pelvic muscles. The treatment of the acute poliomyelitis consisted generally in the administration of convalescent serum that had been obtained in this epidemic. Following the acute stage the paralytic parts of the organism were subjected to intensive after-treatment in the form of massage, electrical treatment, passive and active exercises, diathermy and so on. As these measures proved ineffective in many cases of severe paralysis, the author decided to try malariotherapy. After citing the factors that induced him to resort to this measure, he gives a tabular report of eighteen cases. The table indicates that the number of malarial attacks varied between four and ten. The time of the beginning of the malarial treatment varied between sixteen and 103 days after onset of the disease. In discussing the results of the treatment, the author points out that the time is too short to permit a final evaluation, but the tabular report indicates that all patients were somewhat improved and that in five cases the results were excellent. He concludes that malariotherapy is an important therapeutic aid in the paralytic sequels of poliomyelitis.

Erythrocyte Sedimentation Speed in Malignant Tumors.—Reichel describes his technic of the sedimentation reaction and then discusses the factors that influence it. He points out that the sedimentation is not a reaction of the malignancy of a tumor but merely the manifestation of the resorption capacity for inflammatory and necrotic products. If the tumor itself has reached a certain size, it becomes readily necrotic. Moreover, the tumor often ulcerates and thus may cause infection of its own and of surrounding tissues. Then it may close excretory ducts, and the resulting stasis readily leads to infection. In these ways a malignant tumor leads to an acceleration of the sedimentation speed. As a nonspecific reaction, the sedimentation alone cannot be the basis of the diagnosis of a malignant tumor. However, since it is accelerated in 90 per cent of malignant tumors, a normal sedimentation speed in a doubtful case excludes a malignant tumor with considerable certainty. On the other hand, an acceleration of the sedimentation speed often directs attention to the presence of a malignant tumor.

Medichniy Zhurnal, Kiev

6: 658-994 (No. 3) 1936. Partial Index

Problems of Experimental Medicine. O. O. Bogomolets.—p. 675.
Antireticular Cytotoxic Serum Therapy of Scarlet Fever. O. O. Bogomolets and P. D. Marchuk.—p. 689.
Effect on Glycemia of Homotransfusion and Heterotransfusion. N. B. Medvedeva.—p. 699.
Method of Denervation of Liver in Animals. I. M. Ishchenko.—p. 707.
Rôle of Nervous System in Regulation of Morphology of Blood Picture. N. D. Yudina.—p. 713.
*Blood Tranfusion Therapy of Scarlet Fever. A. M. Zuykov, A. L. Shekhet, V. O. Zavoiko and V. N. Meshchershkiy.—p. 839.

Blood Transfusion Therapy of Scarlet Fever.—Ninety-three patients suffering from scarlet fever were treated by Zuykov and his associates with blood transfusions. In the majority of the cases the blood was taken from donors who had not had scarlet fever. The transfusion was performed in the early stage of the disease, between the second and fifth days. The amount varied between 100 and 300 cc., depending on the age of the patient. In sixty-one of the cases the transfusion aborted abruptly the course of the disease. From six to ten hours after the transfusion the temperature fell to normal, and the manifestations of intoxication and the inflammatory process in the throat showed a pronounced improvement. Convalescence took place two or three days later. Considerable improvement was noted in twenty-four cases. The temperature came down and the course of the disease became milder. In eight cases in which there were complications, the blood transfusion did not give a therapeutic effect. A strong reaction to transfusion was exhibited by six gravely sick patients. Following the transfusion there was a rapid and persistent fall of temperature. The therapeutic effect was best in patients in whom the toxic manifestations predominated over the inflammatory. This therapy gave a more permanent and a more pronounced therapeutic effect than the antitoxin-serum therapy. The authors believe that blood transfusion in scarlet fever acts as a nonspecific irritant and that colloidoclasis was the basis of it. Blood transfusion does not safeguard against complications resulting from the action of streptococci accompanying the infection. The authors recommend the employment of blood transfusion in all severe cases of scarlet fever, especially the toxic and malignant varieties. In order to be successful the transfusion should be performed in the early stage of the disease and the citrated blood utilized should not be more than twenty-four hours old. The authors likewise obtained equally good therapeutic effects in thirteen cases of moderately severe scarlet fever in which small doses (from 0.25 to 0.5 cc.) of cytotoxic antireticular serum were administered.